

**JOINT FORCES STAFF COLLEGE
JOINT ADVANCED WARFIGHTING SCHOOL**

**"The Integration of all Fleet Air Arm Helicopters into Joint Helicopter
Command"**

By

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**A paper submitted to the Faculty of the Joint Advanced Warfighting School
in partial satisfaction of the requirements of a Master of Science Degree in
Joint Campaign Planning and Strategy.**

**The contents of this paper reflect my own personal views and are not
necessarily endorsed by the Joint Forces Staff College or the Department of
Defense.**

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04 April 2008

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REPORT DOCUMENTATION PAGE			<i>Form Approved</i> <i>OMB No. 0704-0188</i>		
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 13 06 2008		2. REPORT TYPE Master's Thesis		3. DATES COVERED (From - To) 23-07-2007 to 13-06-2008	
4. TITLE AND SUBTITLE The Integration of all Fleet Air Arm Helicopters into Joint Helicopter Command			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S) Lieutenant Commander Louis M Wilson-Chalon Royal Navy			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Joint Forces Staff College Joint Advanced Warfighting School 7800 Hampton Blvd. Norfolk, VA 23511-1702			8. PERFORMING ORGANIZATION REPORT NUMBER JFSC 25789		
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release, distribution is unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT The 1998 Strategic Defence Review established the need for a new joint command, Joint Helicopter Command, responsible for the integration and deployment of all battlefield helicopters from the three British Armed Forces. Although this has ensured coherency during helicopter deployment, there remains insufficient numbers available resulting in a 38 per cent shortfall of this valuable asset and significant force multiplier. This sets the stage for the next evolution of JHC to take responsibility for all MOD helicopters as a functional command. There are already signs that the current lack of rotary assets is seeing greater use of maritime helicopters, from Fleet HQ, in support of land operations. Procurement of new aircraft will make use of latest technologies, which will further facilitate maritime helicopter use to land operations through greater airframe commonality and an increase in overland capability. In ever increasing joint organisations within the British military, can a restructure of Fleet helicopters assets to JHC be of benefit to all? In order to effect such a restructure it is necessary to investigate the process of change, the extent to which jointness is the answer and examine the timeliness of such a move.					
15. SUBJECT TERMS Fleet Air Arm, Joint Helicopter Command, Maritime Helicopter Integration, transformation, Jointness, Jointery					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Unclassified Unlimited	18. NUMBER OF PAGES 75	19a. NAME OF RESPONSIBLE PERSON
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER (include area code) 757-443-6301

Abstract

The 1998 Strategic Defence Review established the need for a new joint command, Joint Helicopter Command, responsible for the integration and deployment of all battlefield helicopters from the three British Armed Forces. Although this has ensured coherency during helicopter deployment, there remains insufficient numbers available resulting in a 38 per cent shortfall of this valuable asset and significant force multiplier. This sets the stage for the next evolution of JHC to take responsibility for all MOD helicopters as a functional command. The proposal here is that further benefit can be exploited by grouping the remaining helicopters, in particular, those with a traditional purely maritime role of the RN, under JHC. There are already signs that the current lack of rotary assets is seeing greater use of maritime helicopters, from Fleet HQ, in support of land operations. Procurement of new aircraft will make use of latest technologies, which will further facilitate maritime helicopter use to land operations through greater airframe commonality and an increase in overland capability. In ever increasing joint organisations within the British military, can a restructure of Fleet helicopters assets to JHC be of benefit to all? In order to effect such a restructure it is necessary to investigate the process of change, the extent to which jointness is the answer and examine the timeliness of such a move.

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“Reformers have the idea that change can be achieved by brute sanity”

- George Bernard Shaw

INTRODUCTION

The United Kingdom’s Ministry of Defence (MOD) Strategic Defence Review (SDR)¹ of 1998 ordered the formation of the Joint Helicopter Command (JHC). The aim was to develop efficiency in the deployment of battlefield helicopters as supplied by the Royal Air Force (RAF), Army and Royal Navy (RN) in support of land, amphibious and Special Forces operations. Since JHC was established under UK Land Forces at Land Headquarters, Wilton, in October 1999 it has been successful in achieving deployment efficiencies² by having a single HQ with operational control of all battlefield helicopters.

Currently there is a large variety of helicopter types within the Armed Forces inventory, 70 per cent³ of which are under the joint command of JHC, but trends in recent aircraft procurement indicate that there is likely to be greater helicopter commonality in the future across the 3 Services⁴. The proposal here is that further benefit can be exploited by grouping the remaining helicopters, in particular, those with a traditional purely maritime role of the RN, under JHC. Thus, as an authority

¹ House of Commons Defence Select Committee, *Strategic Defence Review HC 138 1997-1998*, 3 September 1998, 3.

² House of Commons Research Paper 98/91, *The Strategic Defence Review White Paper*, 15 October 1998; stated that with separate commands 40 percent too many helicopters were deployed to Bosnia in 1996, 4.

³ Ministry of Defence Comptroller and Auditor General, *Helicopter Logistics HC 840 Session 2001 – 2002*, 23 May 2002, 1.

⁴ The Army currently operate Apache AH1, Lynx Mk7, Bell 212. The RN operate Merlin Mk1, Lynx Mk3/8, Sea King Mk4/5/7. The RAF operates Chinook HC2, Merlin HC3, Sea King Mk3, and Puma HC1. The recent demise of Gazelle, Lynx Mk9 and shortly Puma has already reduced the number of helicopter types with commonality between new airframes, most notably Navy and Airforce Merlin already. Airframe commonality is set to grow with Future Lynx contracts let for the Navy and Army and the grouping of the older Sea King airframes all now under one IPT. It is anticipated that RAF Chinook and RN Sea King 4 could be replaced by Support Amphibious Battlefield Rotorcraft (SABR – aircraft type yet to be announced). This would generate commonality of airframes across all roles in all Services with the exception of Apache in the Army only.

which provides a single point of contact for all UK MOD helicopter operations, it is anticipated that JHC can make significant savings in the development of future aircraft fleets through direct liaison with industry and co-ordination through the Defence Equipment and Support (DE&S) agency.

The thesis statement is that: The time is right for all rotary wing aircraft of the Fleet Air Arm (FAA) to become part of the Joint Helicopter Command (JHC). Whilst battlefield helicopters of the Commando Helicopter Force (CHF - part of the Fleet Air Arm) are already within JHC, the aim is to investigate the further advantages, such as deployment tasking and future aircraft development, which can be made. In effect moving the RN's remaining Fleet Air Arm (FAA) maritime helicopters under the umbrella of JHC is the next stage of evolution. This would create an HQ where even more efficient use of assets can be achieved, and which incorporates all British defence helicopter operations of the Armed Forces. The timing, process of change and implications of such a move will be discussed in order to examine the rationale of the restructure, and down stream effects must also be considered.

In 2006 Major General Gary Coward, Officer Commanding JHC⁵, speaking of deployments to Afghanistan and Iraq was quoted as saying that “in both theatres, deployed commanders are consistently asking for continued and enhanced helicopter support” and helicopters were cited as a “critical enabler”. However, despite efficiencies in the deployment of helicopters under JHC made so far, there remains a major shortfall of up to 38 per cent⁶ of the required number available to UK Land Forces. In the House of Commons’ Comptroller and Auditor report into MOD

⁵ Major General Gary Coward discussion with Jane’s correspondent, Tim Ripley, about deployments to both Afghanistan and Iraq as reported in *Janes Defence Weekly*, December 2006, transcript available at <http://www8.janes.com.ezproxy6.ndu.edu>, 1.

⁶ Ministry of Defence Comptroller and Auditor General: *Battlefield Helicopters HC 486 Session 2003 – 2004*, 7 April 2004, 2, para 3.

battlefield helicopters, published in April 2004, this deficit in helicopter assets was due to remain until 2017⁷. It is proposed here that greater efficacy of limited assets may be made by incorporating the remaining non-battlefield helicopters from the RN into JHC to help bridge this deficit by increasing the flexible use of assets available.

At present Full Command⁸ of Fleet Air Arm maritime helicopters is exercised through Fleet HQ in Portsmouth. In order to investigate what advantages are to be gained by the grouping the Fleet Air Arm maritime helicopters within JHC, in the same manner as the battlefield helicopters from all three Services. Essentially, this would form a maritime wing within JHC. In order to achieve this, a number of complex areas require discussion, but fundamental is the transfer of responsibility. It is unrealistic to expect that Full Command be transferred to JHC, yet in order to achieve the correct level of synergy, beyond that of the control of operations, to facilitate the development of doctrine and training, and smooth aircraft procurement, a greater level of responsibility needs to be provided to JHC rather than just the transfer of forces under Operational Command (OPCOM)⁹ for specific operations.

To understand if new HQ structures and transfer of responsibility for maritime helicopter employment will help fill the current shortfall of battlefield helicopters, it will be necessary to investigate Fleet Air Arm aircraft capabilities and their application to overland operations. This would also involve a “delta” in training of

⁷ *Ibid*, 2.

⁸ Full Command is the military authority and responsibility of a commander to issue orders to subordinates. It covers every aspect of military operations and administration and exists only within national Services. Note: the term “command” as used internationally, implies a lesser degree of authority than when it is used in a purely national sense i.e. no NATO or coalition commander has Full Command over the forces assigned to him since, in assigning forces to NATO, nations will delegate only operational command or operational control. *Joint Warfare Publication 0-01.1: UK Glossary of Joint, Multinational Terms and Definitions (7th Edition)*. 8 January 2007.

⁹ Operational Command is the highest degree of command usually retained for the duration of an operation or campaign. It would be normal for the national military strategic authority to place assigned forces under OPCOM of a national joint operational level commander who will then have the authority to assign missions to those forces, to deploy or reassign elements of the formation. *Joint Warfare Publication 0-01.1: UK Glossary of Joint, Multinational Terms and Definitions (7th Edition)*. 8 January 2007.

the aircrew and development of appropriate doctrine. Increase in helicopter availability to battlefield operations would inevitably lead to a reduction in the number of maritime assets presented for Fleet programming, so debate between current maritime tasking and the needs of the battlefield will be investigated.

Potentially, the Defence Equipment and Support (DE&S) agency stands to gain much, in terms of co-ordination, from such a restructure. It is proffered that, to have one central customer for rotary wing aviation operations, the path will be eased for more efficient supply of spares to helicopter fleets. Moreover in the development of future aircraft types across the Armed Forces, JHC would aid coordination in the procurement process to Defence Equipment and Support agency, and more specifically the Integrated Project Teams. Therefore examination of prospective helicopter replacements for both JHC and the Fleet Air Arm will be a key issue in this study – specifically the timing and implications of new buys will be fundamental to the instance of such a restructure. This has huge ramifications since it will infer the location of future helicopter fleets' bases. This is currently under investigation through Project BELVEDERE¹⁰.

In order to comprehend some of the advantages of developing JHC further, a brief discussion will be made of areas relating to tri-service helicopters which have already been morphed into a joint organisation. A limited study of the roles and future capabilities of RAF, RN and Army helicopter fleets will be made to demonstrate that this idea is merely a continuation of a successful trend already in place. Some speculation of likely aircraft replacements is required and the probable implication to helicopter aircrew training of the three Services. Analysis of known

¹⁰ Project BELVEDERE is the MOD sponsored study into the closure of military airfields, which is being conducted by a study group based at, and under the direction of, JHC.

and forecast Armed Forces' helicopter needs under future procurement project options will be conducted in order to bring these points together.

Throughout there is recognition of the importance to broader force structures. Individual Service environmental specialities, capabilities and their differing ethos' must be maintained. And this must be done mindful of policies already set through Defence White Papers and other programmes such as the Future Carrier (CVF) and project BELVEDERE. These may serve to support or undermine this work by offering strategic direction and timing to this study. An informed view of the effect of these on this study can only be taken at the time of going to print.

In addition to the change process, timing and any counter argument aired to provide balance, the study must examine the pros and cons of moving the remaining Fleet Air Arm helicopters to JHC. If it were simple and immediately effective, as suggested by the idea, this line of discussion should resolve the issue of why it has not already taken place. Inevitably such a move would occur at the expense of moving personnel from Fleet HQ to JHC in order to facilitate the new arm of JHC, whilst linkages for continued tasking in support of RN surface ships will also have to be drawn. Affordability under current cost neutral constraints must also be considered and the wider picture of what else is taking place that may be of higher priority, or greater advantage, to the MOD/Government. Even though a new structure can be proposed, a further business case will be needed to produce a full cost-benefit analysis of the situation. It is not intended to produce such an analysis here, but to demonstrate that there is significant gain to be made in the immediate future by arguing the benefits for such a business case to follow. Reinforcement of this idea is demonstrated by some of the successes already gained and may provide some insight to further possible gains, and as a roadmap to development of JHC.

SECTION 1: CURRENT SITUATION

Policy and Strategic Direction

British Defence Policy

The Labour Government's Strategic Defence Review¹¹, which was published through a House of Commons research paper on 15 October 1998, recognised the end of the Cold War and gave direction for the three Armed Services (Royal Navy (RN), Army and Royal Air Force (RAF)) to develop¹² across a wider spectrum of conflict than traditional warfare associated with the "high intensity" operations. The Strategic Defence Review directed that two central pillars should emerge – more rapidly deployable Armed Forces and "jointery"¹³. More flexible forces, lighter and more adaptable, to be employed across the spectrum of military operations (Figure One) were seen as the order of the day. These were to utilise the latest emerging technologies to consolidate the "fighting teeth" in order to prosecute high intensity conflict and ensure combat effectiveness at all levels of combat were maintained. In support of the establishment of new structures, the development of Joint Rapid

¹¹ House of Commons Research Paper 98/91, *The Strategic Defence Review White Paper*, 15 October 1998.

¹² The direction in Defence White Papers is to develop capability across a wider spectrum of conflict including greater expeditionary forces. This includes equipment, greater mission roles and supporting doctrine and training.

¹³ Jointery, coined by the British Armed Forces is synonymous with Jointness, as defined in *U.S. Joint Publication 1-02*. Similar to Jointness, Jointery defies consistent definition, but its use in the Military is intended to describe all organisations, actions and operations that have more than a single service purview. In the US, the Goldwater-Nichols Act, the Chairman of the Joint Chiefs of Staff, the Senate Armed Services Committee, and students of operational art all define Jointness slightly differently. Goldwater-Nichols mandated Jointness by structural reforms; General Colin Powell described it as inter-service teamwork; while others hope Jointness will be a mechanism for eliminating what is considered to be redundant roles and missions. According to its official definition, "Jointness" is "the integration of the strengths of at least two limbs of the Military in a coordinated effort to achieve a common goal". Jointness is an important factor in developing Joint Operations. It enables flexible leadership for the commander of a group, increases effective functioning, and creates an involvement between military limbs. Beyond the definition, in a similar fashion as the use of Jointery in UK Services, Jointness is an expression adopted by the U.S. Services to describe cross service cooperation in all stages of the Military processes, from research, through procurement and into operations. Jointness is aimed at satisfying the requirements for increasing efficiency and economizing the security budget. In both countries Jointness/Jointery are evolving to include cross government agencies and multinational inclusiveness.

Reaction Forces (JRRF) was seen as one of the more potent symbols of this change in direction for the Ministry. This epitomised the force development for the British Military toward expeditionary warfare.

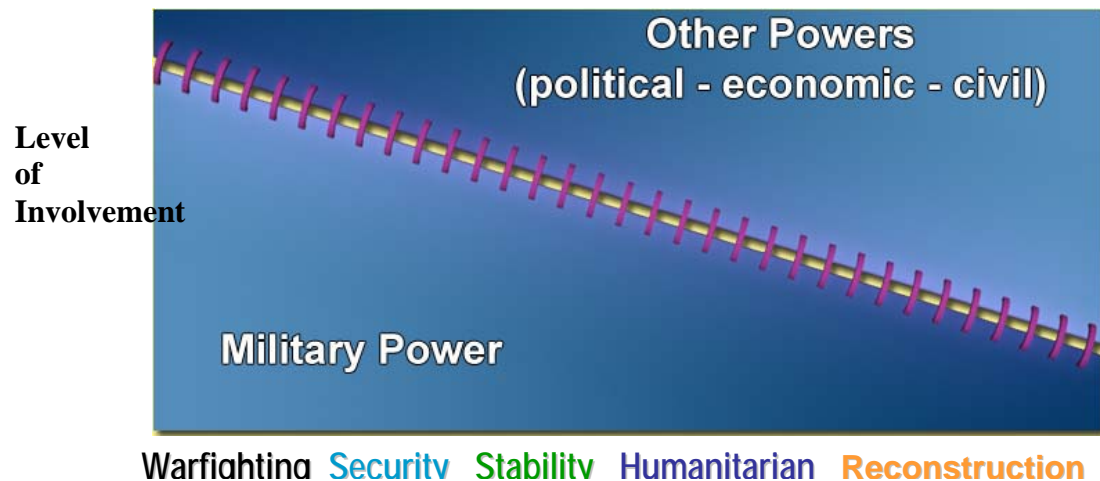


Figure 1: Spectrum of Military Operations¹⁴.

The 1998 Strategic Defence Review mandated that JHC be formed as an element of the “joint” approach through which all battlefield helicopters of the Army (all Army Air Corps (AAC) assets), RAF (Strike Command) and RN (Fleet Air Arm Commando Helicopter Force(CHF)) would be directed. Later and in response to the September 11th 2001 attacks in New York and Washington, a review of Strategic Defence Review was ordered by the Secretary of State for Defence. The British view of the September 11th attacks was that of a seminal event that changed the face of UK and international security and therefore required more specific direction for the Armed Forces. The resulting document by the Ministry of Defence (MOD) called The Strategic Defence Review: A New Chapter¹⁵, was published in July 2002 and remains the baseline document with respect to the structure of the Armed Forces

¹⁴ ACT speaker lecture. 12 October 2007.

¹⁵ Secretary of State for Defence, *The Strategic Defence Review; A New Chapter Cm 5566-I*, July 2002.

today. Of course this has not remained static, with several Defence White Papers since designed to update the British Armed Forces with Her Majesty's Government's strategic direction and policy. In order to understand the context of such direction the relationship of policy and doctrine must be examined.

Policy, Doctrine and Strategy

Policy is the Government's response to the prevailing strategic environment in pursuit of national interests. It cascades down, as guidelines, to subordinate organisations to provide direction. Ultimately at the grand strategic level it is determined by the Cabinet where it is a national, integrated policy for the conduct of external affairs and relations with respect to national security. This spans the business of several Government departments and provides the integration of those departments. For the Military, the focus is in defence policy. The defence policy provides guidance for more detailed policy made within the MOD, at the military strategic level and below. Policy must be both fluid and enduring, being capable of rapid review if strategic circumstances change, as framed in the Defence White Papers. Nevertheless, in response to the more stable features of the strategic environment, policy must also take on an enduring quality. This will have an influence on strategic thinking and the development of military strategic doctrine.

British Defence Doctrine¹⁶ is concerned primarily with the military strategic level, and therefore has an important relationship with defence policy. In contrast with the more changeable nature of policy, military strategic level doctrine is informed by fundamental lessons learned over time about the ways in which military forces can be used effectively in support of policy. Since doctrine is the way in which

¹⁶ Ministry of Defence, *JWP 0-01 British Defence Doctrine 2nd Edition*, 08 Jan 2007, 1-1.

the Armed Forces direct procurement and training, it is more enduring and less subject to change, although it must not be allowed to become rigid or inflexible so as to invite dogma. An alternative way of British Defence Doctrine is to describe it as the bridge linking policy and operational effect. As such, it consists of an approach to the delivery of policy within the prevailing strategic circumstances. Doctrine is, therefore, a reflection of what the UK's Armed Forces will do and how it will be done. As doctrine is a guide to military commanders on the conduct of campaigns, operations and the tactical employment of forces in support of national policy, it is axiomatic that structural changes to HQs, like the move of maritime rotary wing aircraft to JHC, should be reflected accordingly throughout policy and doctrine.

The UK's military strategy draws together defence policy (which must reflect the realities of the strategic environment) and military doctrine (which provides guidance on the military means of support for policy). While there is always a complex relationship between the two, they each have an influence on the other. Military doctrine at all levels must be developed in a manner consistent with this. So the importance of doctrine in relation to the question of maritime helicopters lying within JHC HQ is two fold – the implementation of policy, which has implications which will affect future procurement and training, and the slow process of change to make it enduring.

Defence policy is articulated in the form of defence tasks or missions which give structure to the goals and objectives of the Armed Forces. So the ultimate question is whether the move of maritime aircraft to JHC will improve the posture of helicopter assets in order to better prosecute the defence missions? If greater effectiveness is demonstrated in this area then it is a significant step in favour of the change.

Defence White Papers¹⁷: The Future

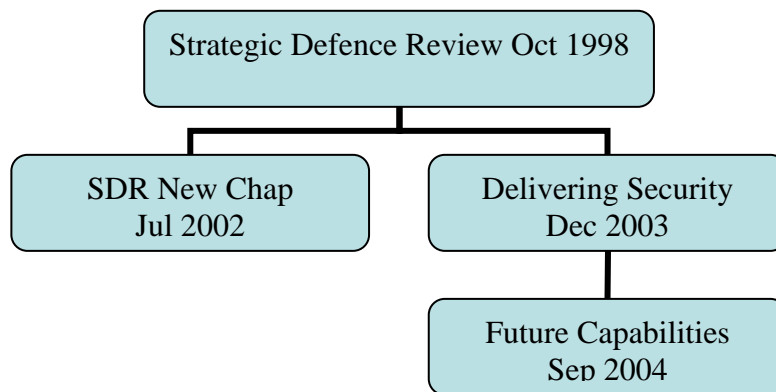


Figure 2: Extant Structure of Defence White papers

A review of Defence White Papers since the Strategic Defence Review, and the September 11th attacks, confirms the direction of “jointery” and transformation to more flexible expeditionary forces. Figure 2 depicts the relevant papers and their relationship that give the necessary policy to shape and inform military strategy. The latest paper, presented to Parliament by the Secretary of State for Defence in December 2003 called *Delivering Security in a Changing World*¹⁸, sets out the MOD’s analysis of the current situation and tries to identify the future security environment¹⁹. The following July 2004 Defence White Paper is effectively an additional chapter which gives structure to the development of *Future Capabilities*²⁰ in response to this.

There are 3 key factors which are driving change within the British Military today, and thus provide the basis for the recommendations set down in the Future

¹⁷ A White Paper is an informal name for a parliamentary paper enunciating government policy. White Papers are issued by the government and lay out policy, or proposed action, on a topic of current concern. Although a White Paper may on occasion be a consultation as to the details of new legislation, it does signify a clear intention on the part of a government to pass new law. Thus a Defence White Paper is a White paper that lays out British government policy with respect to the Ministry of Defence and to Defence matters.

¹⁸ Secretary of State for Defence, Defence White Paper Cm 6041-I, *Delivering Security in a Changing World*, December 2003.

¹⁹ *Ibid*, in a similar fashion to U.S. QDR 2006.

²⁰ House of Commons Research Paper 04/72, *The Defence White Paper: Future Capabilities*, 17 September 2004.

Capabilities chapter. These are articulated with respect to scales of operations, or vignettes, where Her Majesty's Government anticipates that the employment of Military forces will be based on planning assumptions. The assumptions now reflect that multiple small to medium-scale operations²¹, over a wider geographical area, are to become the normal drivers for force planning than was previously envisaged in the 1998 Strategic Defence Review. Specifically the planning assumptions have been revised to ensure the sustainability of 3 simultaneous and enduring operations of small to medium-scale²². Given time to prepare²³, UK military forces should be capable of undertaking a demanding large-scale intervention operation while still maintaining a commitment to a small-scale peace support operation. Participation will generally be in coalition with other countries, and large-scale intervention operations are unlikely to be conducted without the U.S.²⁴.

Effects Based Operations (EBO) and the ability to achieve one, or a combination of eight, desired effect(s) across the range of defence missions are to be the main factor in establishing the balance of capabilities required. Developing a fully integrated Network Enabled Capability (NEC) is considered to be at the centre of this approach. In any case, there is a consequence of fewer platforms required to achieve the desired military effect. The emphasis is no longer on quantity of platforms as a measure of capability²⁵. This signals the reduction in force numbers, yet increases the

²¹ *Ibid*, 7.

²² *Ibid*, Key factor 1, 7.

²³ *Ibid*, Key factor 2, 8.

²⁴ *Ibid*, Key factor 3, 8.

²⁵ Consequently the Army will be restructured to provide a more balanced and flexible force with the emphasis on developing a medium-weight capability, with the introduction of the Future Rapid Effects System and the "re-rolling" of 4 Armoured Brigade into a mechanised brigade. The RN will lose three Type 42 destroyers and three Type 23 frigates by March 2006 and six mine countermeasure vessels by 2007. It will also lose three nuclear-powered attack submarines (SSNs). The acquisition requirement of the Type 45 air defence destroyer has also been reduced from 12 to 8. The manpower requirement of the Navy will reduce by 1,500 to 36,000 by April 2008 as reported in the Future Capabilities DWP. House of Commons Research Paper 04/72, *The Defence White Paper: Future Capabilities*, 17 September 2004, 17.

need for flexibility, through establishment of EBO and NEC systems. It also increases the need to be able to “plug and play” with fewer numbers of helicopters across a greater number of small scale operations. By this token, it is highly desirable, essential even, to have a single HQ that can co-ordinate helicopters with a unity of effort approach in order to meet this requirement. This significant development thus requires the British Military to take the next step in grouping all helicopter assets together.

Background and Service's Structure Overview

Royal Air Force

The majority of the RAF helicopter fleet provides medium and heavy lift Support Helicopters (SH) to the battlefield. Consequently at the inauguration of JHC the mainstream RAF rotary wing aircraft were naturally subsumed into the new organisation. Additionally, with the joining of the rotary wing flying training pipelines, under the tri-service Defence Helicopter Flying School, very few helicopters remain purely within the single Service, RAF, structure. Thus today, the only RAF rotary wing assets still retained under an entirely RAF hierarchical structure are the Search and Rescue (SAR) Sea King 3 aircraft. They operate similar aircraft types to the RN, Sea Kings – albeit a different mark, but are task organised totally separate to the RN SAR squadron. It seems to make sense to remove this final separate entity. Coverage of much of the UK coastline, where the Services has traditionally provided helicopter support to the Coastguard, has been contracted out to companies such as Bristow Helicopters. This leaves very few of the areas still under MOD responsibility. Specifically, these have remained because there has been a dual purpose for the military SAR aircraft. RAF Sea Kings still work with RAF Mountain Rescue Teams, and cover the maritime tactical training areas of the RAF. They were initially established for the recovery of fast jet crews, and are based at locations such as RAF Lossiemouth (Scotland) and RAF Boulmer (North Sea). RN SAR Sea Kings remain at Prestwick (Scotland), providing mountain rescue coverage and support to the submarines based at Her Majesty's Naval Base Faslane, and Royal Naval Air Station Culdrose (Cornwall), covering the Flag Officer Sea Training and tactical training areas to the south. These ongoing commitments also serve to maintaining training and support to provide crews with experience and expertise, which give

MOD the ability to deploy military helicopters for peacetime SAR in support of exercises, or to the Carriers where a purely SAR role is required²⁶.

Until a decision to replace all Sea King aircraft²⁷ is made, current projections are that there are sufficient airframes to continue rolling on until 2017²⁸. The control of the Sea King SAR force must be accommodated in the new structure under JHC. This would also subsume the RAF Griffin Flight in Cyprus and Sea King Flight in the Falkland Islands, along with the various flights of RAF 202 and 22 Squadrons, plus the RN's 771 Squadron and its flight. In any event, either removal of RAF and RN SAR Sea King squadrons through further contractualisation, or by replacement, the movement into the JHC will only serve to better co-ordinate the limited resources and future plans. This does not undermine the separate organic Combat SAR capability which exists within the JHC Support Helicopter inventory.

Army

The British Army's view of helicopter employment is that it is integral to Land Manoeuvre. The Director General Doctrine and Developments stated that Land Manoeuvre was a combination of Ground and Air Manoeuvre where Air Manoeuvre seeks to blend ground forces, attack helicopters, support helicopters, air transport, offensive support and the use of the electro-magnetic spectrum within a combined arms and joint approach to operations²⁹. The definition of Air Manoeuvre being

²⁶ It should be noted that RN Merlin and Lynx (to a more limited extent) can provide a deployable SAR role, but fewer assets in the future will diminish the flexibility to have such aircraft available.

²⁷ Other than the RAF/RN SAR Sea Kings the Armed Forces still operate Sea King Mk 4 in the RN Commando Role and Sea King Mk 7 in the RN Airborne Surveillance and Control (ASaC) role.

²⁸ Defence Systems Daily, *UK Support Helicopter Programmes: Budget Sleight Of Hand*, May 2005, 1.

²⁹ Director General Doctrine and Developments Doctrinal Note 00/2, *Air Manoeuvre Operations*, Issue 1:8 January 2003, 1.

“Operations within the Land Component Scheme of Manoeuvre, seeking decisive advantage by the exploitation of the third dimension; primarily by combined-arms forces centred around and integrated with rotary wing aircraft, supported by other component elements, within a joint framework – nationally and multi-nationally”³⁰.

It states that Air Manoeuvre will be capable of conducting the core functions of finding, fixing and striking, throughout the operational framework of Deep, Close and Rear operations. It will be especially significant in the prosecution of deep operations. As aviation platforms become more capable in terms of firepower, protection, mobility and the ability to process and react to information, Air Manoeuvre is likely to be of increasing importance within alliance/coalition operations. It will also become an increasingly important means of attacking the enemy’s will and cohesion through use of long-range precision-attack assets (the deep attack), the ability to sustain operations and key C2ISR (Command and Control, Intelligence, Surveillance and Reconnaissance) systems. These are clear roles to which Fleet Air Arm maritime helicopters can be measured. In the AAC Tactical Manual³¹ the roles of Army Aviation distils to the following:

1. Offensive Action
 - a. In Air Manoeuvre and Ground Manoeuvre
 - b. Close in Fire Support (CIFS)/Precision Attack
 - c. Specialist Fire Support e.g. Special Forces
2. Intelligence Surveillance Target Acquisition Reconnaissance (ISTAR)
 - a. Attack Helicopter (Armed Reconnaissance)
 - b. Light Utility Helicopter
3. Direction of Firepower

³⁰ *Ibid.* 1.

³¹ British Army Electronic Battle Box Edition 9, *Army Aviation Tactic Manual*, January 2005.

- a. Airborne Forward Air Controller
 - b. Indirect Fire (Aerial Observation Platform (AOP), Naval Fire Support(NFS))
- 4. Command Support
 - a. Airborne Command Post
 - b. Commanders' Rover/Air Taxi
 - c. Radio Rebroadcast
 - d. Liaison functions/Taxi
- 5. Movement of Personnel and Materiel
 - a. Tactical Mobility for Ground Forces
 - b. Forward aero Medical Evacuation/Casualty Evacuation
 - c. Movement of Specialist Teams
 - d. Movement of Materiel

This framework, as laid out by the British Army, is a most useful list of roles in order to develop the logic of where RN maritime helicopters RN can fill in. There have already been a number of occasions where Fleet Air Arm aircraft, more commonly used in purely maritime ops, have provided significant support to land operations in such roles. Some recent successes will be discussed in the following RN section. It is worthy of note that some Fleet Air Arm helicopters' capabilities have actually enhanced land operations bringing greater capability, particularly by use of their radar, to Land Forces than otherwise available.

Royal Navy

Within the continuum of military operations it is envisaged that employment of RN's helicopter inventory – Merlin, Lynx and Sea King ASaC, can make significant impact by participating in all but the Offensive Action piece. Inevitably role fit, particularly a lack of a Defence Aid Suite³², and the environment including hostilities will determine the success in which maritime optimised variants can be employed. However, Merlin and Sea King radar fits can bring an additional dimension to the overland battlespace. Some current operational successes of the different helicopter types that are operated by the RN and not yet part of JHC follows:

1. Sea King ASaC – Operational Success:

During Operation Telic³³ in 2003 Sea King ASaC's of 849 Squadron A Flight, embarked in HMS Illustrious provided ISTAR capabilities to 3 Commando Brigade and coalition forces in the lead up to and assault on the Al Fawr peninsula. This also led to the direction of Royal Marine air manoeuvre assets and aided in the co-ordination and direction of fires. For 3 weeks prior to the start of ground operations significant intelligence was gained at stand-off range over the sea of movement around the Main Supply Routes (MSR). By using link 16³⁴ to transfer targets of interest the information was used to cue Unmanned Air Vehicles (UAVs) for identification confirmation.

³² Defence Aid Suites include automatic and manually operated chaff and flare launchers and equipment that both detects and reacts to incoming Surface to Air Missiles with both radar and infra-red seeking homing heads. Currently they are not fitted to Sea King ASaC or Merlin Mk1 and have limited fitting to Lynx Mk 3 and 8 both in terms of capability of the equipment and a non-standard fleet wide fit (aircraft are fitted with and the crews trained depending on the risk assessment and intended area of operations).

³³ Maritime Operations in the Gulf in support of Operation Iraqi Freedom.

³⁴ A real time data link.

2. Lynx Mk 3 – Operational Successes:

At the draw down of operations in Northern Ireland (NI), during 2006 and 2007, Army Lynx aircraft from 5 Regiment AAC were urgently required for higher intensity operations in Afghanistan and Iraq. Consequently under “Operation Banner” 2 maritime Lynx Flights of 815 Naval Air Squadron (NAS) were effectively amalgamated and sent to RAF Aldergrove NI under the leadership of a senior Flight Commander in order to provide utility based roles in support of patrolling ground troops. Although more limited in carrying capacity than the Army Lynx³⁵, and more limited in night operations³⁶, the maritime Lynx provided crucial capability in the movement of men and material, airborne reconnaissance and observation type roles. Despite the lack of a Defensive Aid Suite this marked the first successful autonomous deployment of the maritime Lynx in purely land centric operations. However, there are numerous examples of where maritime Lynx, embarked on their Frigate or Destroyer, have been used most successfully in other permissive overland operations. Most notably in support of humanitarian or Non-Combatant Evacuation Operations (NEO). In 1999 HMS Norfolk’s Lynx was fundamental to Peacekeeping operations in Sierra Leone, Africa³⁷. In utility type roles she was used to ferry VIPs to facilitate negotiations, conduct evacuations, perform recce missions and for movement of provisions, such as medical aid and food.

³⁵ This is due to the weight from maritime mission role fits and cabin configurations such as radar equipment et al.

³⁶ This is due to limited Night Vision Goggles (NVG) training of the aircrew and lack of NVG cockpit fits for the maritime Lynx.

³⁷ Rerouted from a NATO northern hemisphere exercise HMS Norfolk landed the rescue squad for President Kabbah and was responsible for inserting force protection and intelligence squads. So successful was the operation that operations remained ongoing for some time with relief from HMS Richmond and HMS Argyll, both with their Lynx. HMS Argyll remained on station in 2000 in support of the Amphibious Ready Group.

More recently in early 2006 post tsunamis operations for the British military were led by HMS Chatham³⁸, a Type 22 Frigate whose single Lynx flight was augmented by a second aircraft and crew to facilitate rescue operation in the Sri Lanka region.

3. Merlin Mk 1 – Logistical Success:

As a more recent collaborative procurement option with the RAF and RN this aircraft has some commonality with the RAF Merlin Mk 3. Although the RN Merlin Mk 1 was introduced to Service first at RNAS Culdrose in Cornwall, the RAF Merlin Mk 3's are currently based at RAF Benson, some 250 miles away. In conjunction with Defence Equipment and Support agency, the Merlin Integrated Project Team Culdrose has led the way in developing the Merlin engineering pulse line.

Traditionally helicopter pulse lines, which drive 3rd line in depth maintenance, have been stationed at the Defence Aircraft Repair Agency (DARA) facility at Fleetlands, in Portsmouth. As reported by Defence Helicopter in December 2006, the UK's logistics transformation process now sees the MOD paying for helicopters by the hours they fly. General Sir Kevin O'Donoghue, boss of the Defence Logistics Organisation (DLO) at the time, is quoted as saying "The days of industry making bits of kit and then charging us to repair them for the next 30 years have to be over"³⁹.

The end result is that the pulse line has been developed at Culdrose under the Integrated Merlin Operational Support (IMOS) to bring the ancient divisions between suppliers and front line operators to an end. In order to capitalise on this success it follows that the relocation of Merlin Mk 3, a matter under discussion within the realms of Project BELVEDERE, will only be a matter of time. Although this may be cause for concern to the RAF, the only operational consideration would be the

³⁸ On stand-off from operations in the Gulf.

³⁹ Peter Donaldson, *Pulse of Helicopter Support*, Defence Helicopter, December 2006, 1.

increased distance from traditional exercise areas. However the Merlin Mk 3 with its long endurance and high speed can easily cope with occasional longer transit distances and forward deployment when required. If synergy is to be gained at the grass roots level of operation surely this also supports the idea of a more unified command of all Merlin aircraft and where better than at JHC.

Furthermore, although yet to be proven in land operations, Merlin Mk1 is a large aircraft with significant seating capacity⁴⁰, endurance and aircraft ceiling. Despite the current difficulties for land operations, such as lack of NVG cockpit and DAS, it still has significant load capacity and aircraft envelope. This is most significant when compared to the hot-high performance, range and speed of the Sea King IV amphibious battlefield helicopter. Thus Merlin Mk1 could be employed in permissive land operations, leaving other assets with NVG and DAS to be used in other more hostile areas.

⁴⁰ Although role fit for maritime operations is bulky there is still significant seating capacity, with mission consoles in place, in this modern aircraft which has 3 engines and British Experimental Rotor Blades providing good power to weight ratios and high level performance.

UK Military Organisational Joint successes related to Helicopter Operations

Joint Helicopter Command

The Strategic Defence Review White Paper⁴¹ ordered the establishment of the Joint Helicopter Command under the Command of a 2-star officer in October 1998. As a joint organisation, JHC was charged with training, standards, doctrine and support for operations, and stood up just one year later in October 1999. All Services' battlefield helicopters were brought together under JHC. This excluded maritime helicopters used for small ships' flights (Navy Lynx Mk 3/8), Anti-Submarine Warfare (ASW) (Navy Merlin Mk 1), Search and Rescue (SAR) (RAF/Navy Sea King Mk 2/5), and Airborne Early Warning (AEW) (Navy Sea King ASaC). Figure 3 gives a snapshot of the helicopter assets from each of the Services which are controlled by JHC as of the 2004 National Audit Office report⁴² which remains comparable to the assets under JHC today.

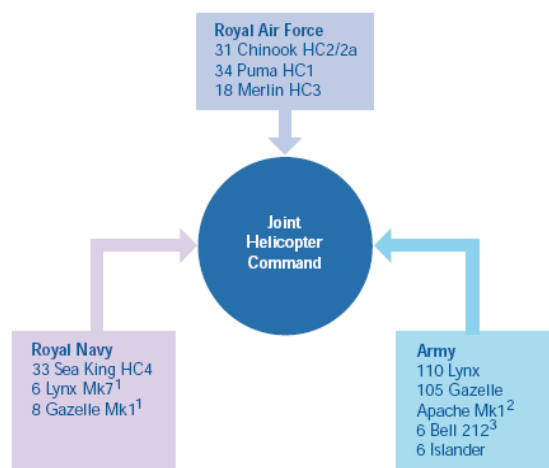


Figure 3: JHC Battlefield Helicopter Structure 2004

⁴¹ House of Commons Research Paper 98/91, *The Strategic Defence Review White Paper*, 15 October 1998, 3.

⁴² MOD Report by Comptroller and Auditor General, *Battlefield Helicopters HC 486, Session 2003 – 2004*, 7 April 2004, 1.

One of the decisive factors in the Strategic Defence Review findings, that determined JHC should be formed, was in the programming and deployment of helicopters by the single Services in support of operations to Bosnia in 1996. The House of Commons Committee of Public Accounts reporting on MOD Battlefield Helicopters, stated that “in 1996 the department (MOD) had deployed some 40 per cent too many helicopters leading to some duplication of capabilities, particularly in combat service support”⁴³. It found that the formation of JHC had actually eliminated such duplication, however, “JHC had not been able to make up the 20 to 38 per cent gapping”⁴⁴ found during more recent operations, i.e. shortfall in assets for Iraq and Afghanistan. Although this later report found increased harmonisation between the Services there are still significant issues, due to lack of assets, which paves the way for the next stage of evolution – the integration of maritime aircraft into JHC.

Permanent Joint Headquarters

For sometime now, British Military operations, as ordered by Her Majesty’s Government through the Defence Council, have been conducted at the behest of the Permanent Joint Headquarters (PJHQ) at Northwood in London. Established in April 1996 it was one of the first truly joint organisations instigated in the British Military, bringing together, intelligence, planning, operational and logistics staffs from all 3 Services. It is similar in design to the U.S. Combatant Commands, but has a global Area of Responsibility.

⁴³ House of Commons Committee of Public Accounts, *Battlefield Helicopters Eighth Report of Session 2004 – 2005 HC 386*, 18 March 2004, 2.

⁴⁴ *Ibid*, 4.

Commanded by the Chief of Joint Operations (CJO), currently a three-star officer, it is responsible for planning all UK-led joint, potentially joint, combined and multinational operations. It therefore works in close partnership with MOD head office in the planning of operations and in policy formulation, thus ensuring PJHQ is well placed to implement defence policy. It also contains elements of a rapidly deployable Joint Force Headquarters (JFHQ) that has the capability of commanding deployed front line forces. PJHQ works proactively to anticipate crises and monitor developments in areas of interest to the UK. This structure ensures a proper, clear and unambiguous connection between policy and the strategy in the conduct of operations.

PJHQ exists on a permanent basis so it is involved in planning from the start, as opposed to establishing a new HQ for each operation. Having planned the operation, and contributed advice to Ministers, PJHQ will then take responsibility for the execution of those plans if necessary. In the conduct of operations it directly tasks both Fleet and Land (within which lies JHC). The proposed change of responsibility between HQs for helicopter operations will not adversely affect PJHQ tasking. Infact it is arguable that it will actually make it easier by devolving the requirement to find assets to one functional HQ, rather than liaison across two.

Defence Helicopter Flying School

The Defence Helicopter Flying School (DHFS) was formed at RAF Shawbury on 1 April 1997. Mandated to conduct all rotary wing initial helicopter training for the 3 Services, it has been a resounding success in delivering new helicopter pilots ready for Conversion To Type (CTT) training on their front line aircraft. With the creation of type specific super bases, the next logical step will be to convert these pilots to their front line aircraft under a further joint organisation at each base.

Thereafter, specific Service role training can take place pertinent to their operational environments. This would further enhance interoperability, understanding and build relationships across the Services adding greater flexibility for the future use of assets. Establishment of super bases in order to achieve this and greater commonality would be far swifter under a single HQ construct – JHC.

Defence Aviation Safety Centre

The Defence Aviation Safety Centre (DASC) was formed on 1st April 2002, at RAF Bentley Priory. The centre is a tri-Service policy, regulation and auditing body within the MOD Central Staff that acts as the executive arm of the MOD Aviation Regulatory and Safety Board, and is the MOD focus for pan-defence aviation safety issues. It provides the Secretary of State for Defence with an appropriate level of assurance on aviation safety-related matters and ensures a common approach to Aviation Safety throughout the 3 Services, the Defence Procurement Agency (DPA) and the Defence Logistics Organisation (DLO)⁴⁵. The main drive from the DASC point of view is commonality for airworthiness (engineering and training) of the three Services, including adoption of best practice. To a great extent, a single HQ would reduce the divergence of procedures found across more than one helicopter operator in support of this.

Joint Doctrine and Concepts Centre

The Joint Doctrine and Concepts Centre (JDCC) was established as a direct result of the 1998 Strategic Defence Review and is responsible for the development of

⁴⁵ Since there has been a merger of the Defence Procurement Agency (DPA) and the Defence Logistics Organisation (DLO) into the Defence Equipment and Support (DE&S) which officially formed on 1st April 2007 taken from <http://www.mod.uk/DefenceInternet/MicroSite/DES/>.

defence doctrine. It provides the joint framework in which the more specific single-Service doctrine must nest. In April 2006 the name was changed to the Development, Concepts and Doctrine Centre (DCDC), when the centre expanded to become the defence authority for doctrinal, conceptual and futures work. At this additional tasking it took on extra environmental staff to reflect the needs of the individual Services. The centre maintains close relationships with the Permanent Joint Headquarters (PJHQ), the single-service warfare centres and the Defence Academy (DA) which is co-located. Today the centre provides an obvious and coherent link in the co-ordination of doctrine development to joint operations. This is fundamental to improving joint doctrine for the employment of helicopters out of their normal environment under a single HQ.

Defence Logistics Organisation and Defence Equipment and Support

In May 2002 a report by the Comptroller and Auditor General looked at MOD Helicopter Logistics⁴⁶. The findings of the report stated that the formation of the Defence Logistics Organisation (DLO), in April 2000, had provided the department with the means of addressing logistics support issues coherently on a tri-service basis. It had done this by working to converge the various single service systems and practices. However, it also stated that the DLO had not yet been able to fully deliver the levels of logistic support to which it had agreed. Although it was acknowledged that this was due in part to one off events and resource constraints, the main hurdle of separate service legacy systems and procedures was an ongoing concern⁴⁷.

Considerable improvement had been made through the introduction of Integrated

⁴⁶ Ministry of Defence Comptroller and Auditor General, *Helicopter Logistics HC 840 Session 2001 – 2002*, 23 May 2002, 1 para 2.

⁴⁷ *Ibid*, 5 para 13.

Project Teams (IPTs) to deal with common airframe, electronics and engine components and the bringing together of the IPTs with industry directors. Since this also encroached on procurement, a further merger of DLO and the Defence Procurement Agency (DPA) ensued to form Defence Equipment and Support (DE&S) as of April 2007⁴⁸. Although still in its early days, it is believed that DE&S will capitalise on the DLO success reported so far. Part of the issue, however, is the bureaucracy of differing HQs and the lack of unified direction in requirements from the front line. A wholly converged management information system to bring together data from sea, land and air environments is still very much required⁴⁹. To fully realise the efficiencies inherent in the initial establishment of the DLO, and more latterly the joining with DPA to form DE&S, all MOD helicopters operating under JHC would be of huge benefit.

Defence Aviation Repair Agency

Since April 1999 the Defence Aviation Repair Agency (DARA) has been established at Fleetlands near Portsmouth. Initially it brought together the RAF Maintenance Group Defence Agency and the Naval Aircraft Repair Organisation; however, it rapidly became the only third line maintenance facility for all rotary wing assets in the UK Armed Forces, including Fleet Air Arm helicopters⁵⁰. This achieved financial success by “economy of scale”, where one organisation was able to outperform the three single Service disparate ones. On site capacity was greater and the provision of mobile deep repair teams to the front line was improved. If all rotary wing assets were grouped under the direction of JHC it would represent a single

⁴⁸ *DES website*. <http://www.mod.uk/DefenceInternet/MicroSite/DES/>. Downloaded September 2006.

⁴⁹ *Ibid*, 6 para 16.

⁵⁰ *DARA website*. <http://www.daranet.co.uk/>. Download September 2007.

customer relationship. In turn this would reinforce this success by allowing DARA to tailor its output to one organisation's requirements.

SECTION 2: Discussion of Structural Changes

Movement of Responsibility between Fleet and JHC

Before a detailed discussion of the process and advantages of the re-organisation of Fleet Air Arm maritime helicopters into JHC, it is important to define what is actually proposed to change. The author, however, does not intend to enter lengthy discussions of which staff moves would take place in response to the suggested restructure. In early 2007, Fleet HQ completed a staff review utilizing the Lean Process⁵¹. Thus, it is considered inappropriate to look at a further reduction in staff at Fleet HQ and until the post "Lean" structure has had time to settle. However, it is important to note that similar staff structures exist within Fleet HQ and JHC with respect to developing and operating helicopter capability. They both utilize a form of matrix management which prevents "stove piping" along lines of development, as with the typical military HQ construct of G/N/J1-9. The most significant difference is in the number of air engineering personnel involved. As a maritime helicopter operating authority, with stricter quality control, Fleet HQ has a much greater level of engineering input than JHC. This needs to be accounted for in the shift of responsibility.

In terms of the transfer of responsibility between the HQs, the definitions of the various levels of authority do not fully articulate the shift. The administrative

⁵¹ The "Lean Process" has been employed RN wide and is led by an outside contractor to breakdown organisations in order to develop greater efficiency in their processes and outputs. All though not necessarily employed to bring about a reduction in manpower this has often been a side product in streamlining processes and taking a "fresh look" at how better to achieve the same or increased output.

authority⁵² element and Full Command must remain with the parent Service in order to cater for personnel and maintain parity of such things as uniform, pay and conditions, and retain ultimate responsibility. Equally, in order to effect the proposed change, the responsibility issue is more than delegation of Operational Command (OPCOM). The responsibility must also give freedom of doctrine and training development, the ability for JHC to dictate future capability requirements to procurement, and allow organisation changes to ensure helicopter full integration. The best model that strikes these key notes is the current command structure responsibilities and authorities of JHC over the RN component – the Commando helicopter Force, which appears to work well. Effectively this is most akin to Functional Command⁵³, where JHC also acts as the co-ordinating authority⁵⁴ for all matters relating to the capabilities and needs of battlefield helicopters. This provides sufficient authority, but allows significant input from parent stakeholders, particularly with respect to airworthiness and programming of assets.

⁵² As defined in *JWP 01.1 UK Glossary of Joint & Multinational Terms and Definitions* (7th Ed), December 2006, A4, “administration” is the management and execution of all military matters not included in tactics and strategy or the internal management of units. Whereas administrative authority invests a commander with those aspects of command that are concerned with administration with administrative control as direction or exercise of authority over subordinate or other organisations in respect administrative matters such as personnel management, supply, Services, and other matters not included in the operational missions of the subordinate or other organisations.

⁵³ Functional Command is a command organisation based on military functions rather than geographic areas. It implies functional authority, the obligation owed to a functional superior to comply with a superior’s orders, instructions or advice in a clearly defined field in so far as the orders do not prejudice the achievement of the individual’s primary purpose. Functional control is implicit, which is the authority vested in a commander of one of the Services, a specialist agency, or MOD branch acting on behalf of a service board of the Defence Council, to direct the method of operation and manner of employment of the service units under their control in order to achieve a policy objective. *JWP 01.1 UK Glossary of Joint & Multinational Terms and Definitions* (7th Ed), December 2006, F12.

⁵⁴ The co-ordinating authority is the authority granted to a commander or individual assigned responsibility for coordinating specific functions or activities involving forces of two or more countries or commands, or two or more Services or two or more forces of the same service. He has the authority to require consultation between the agencies involved or their representatives, but does not have the authority to compel agreement. In case of disagreement between the agencies involved, he should attempt to obtain essential agreement by discussion. In the event he is unable to obtain essential agreement he shall refer the matter to the appropriate authority. *JWP 01.1 UK Glossary of Joint & Multinational Terms and Definitions* (7th Ed), December 2006, C25.

Land-Sea Capabilities and General Issues

In the future, procurement of new helicopters will bring potential opportunities for greater land-sea aircraft inter-operability. For example, the RN Sea King Mk 4 is an aging aircraft that will need replacement in the next 10 years. This is most likely to be an airframe that is common to both RAF and RN as a medium/heavy lift Support Helicopter, which will allow for ship-borne operations⁵⁵. It is this sort of future commonality between land and sea optimized airframes that will engender closer links for Fleet HQ and JHC. Thus an examination of recent introductions to the MOD helicopter inventory and a look at the more immediate projects may reveal close links that reinforce the idea to restructure.

Currently, the development of Future Lynx is the best example to demonstrate greater commonality between future aircraft fleets, since the procurement process on this project is well advanced. On 22 June 2006 it was announced⁵⁶ that the replacement for the RN and AAC Lynx would come in the form of 70 Future Lynx, 40 for the AAC and 30 for the RN, with an option for five more each. This sees a significant reduction in overall Lynx aircraft numbers to approximately one half of the airframes⁵⁷ currently in service. With the latest technology, and need to keep manufacture costs down, it is intended that Future Lynx will have the same basic airframe and many parallel features between the land and sea variants. Several significant differences between the current models of Lynx in the RN and the Army will simply not be present. One such area that becomes common to all variants is the wiring looms which provide different role fits. This will provide the ability to

⁵⁵ Known as the Support Amphibious Battlefield Rotorcraft (SABR) project.

⁵⁶ Secretary of State for Defence, *House of Commons announcement*, 22 June 2006.

⁵⁷ There are approximately 65 Lynx Mk 3/8 in service with the RN and 80 Lynx Mk 7/9 with the Army (although the Army have significantly more Lynx airframes this represents the numbers used in the Utility role – the attack Lynx have been replaced by Apache). Currently this represents a total utility force of 165 aircraft of which Future Lynx will replace.

alleviate some of the limitations of the current Naval Lynx's ability to operate over land. With Future Lynx, all aircraft can be fitted with the same DAS and NVG packages. While the Army Future Lynx may not have a radar fitted, the space and ability to fit one will also be there. Future Lynx is not projected to test fly until 2009, so the full advantages may not yet be apparent. For example, the RN Future Lynx also sees the advent of synthetic aperture radar. This may yet prove to have an overland capability, as was found with the Sea King ASaC⁵⁸. In order to leverage this potential, closer development of training and doctrine for overland operations needs to be made.

Additionally, the procurement of the Future Air-Surface Guided Weapon (FASGW) for Future Lynx is likely to be a derivative of the Hellfire missile system. This will come without the restrictions to overland use that the current RN Lynx air-to-surface missile, Sea Skua, has⁵⁹. The significance of this is expressed by the recent loss of the attack helicopters (Lynx Mk 9) of 847 Squadron⁶⁰, which had the ability to be sea based in support of the Royal Marines. In order to fill the void left by this lack of an embarked attack helicopter, the Army Apache has now been designated to operate from sea. The compromises and higher risks associated with operating a helicopter not designed for the maritime environment, with crews limited in such experience, are expanded later in this section⁶¹. The introduction of Future Lynx with FASGW restores this capability without compromise and the risk is eliminated.

⁵⁸ See Royal Navy ASaC – Operational Success section on page 17.

⁵⁹ Sea Skua is not operable within close proximity to land (actual distance classification – “secret”)

⁶⁰ Lynx Mk 9, with the TOW anti-armour, air-to-surface missile was supported by the Army. This became obsolete and was withdrawn from service at the introduction of the Apache.

⁶¹ On page 44, under Jointery.

The idea that the transfer of responsibility for all helicopters to JHC will produce greater efficiency in order to help bridge the 38 per cent shortfall⁶² in battlefield support helicopter lift, and 87 per cent shortfall when looking at ship-optimised support helicopter lift, may have undesired implications for the RN. While some efficiency may be gained, the introduction of new aircraft types, with fewer airframes, may give rise to greater resistance to organisational restructure from Fleet HQ. Fleet's concern will be that the gain in programmable assets for JHC land operations may have a negative impact by de-latching maritime helicopter assets from surface ships. Essentially, Fleet programmes may find giving away this control “a difficult pill to swallow”. Supporters of this argument would agree that, with significantly less airframes in the future, it may be better to safeguard ownership by retaining the Fleet HQ – JHC divide.

During any restructure, the support of RN ships, their training and ability to operate aircraft, must be guarded. Of minimal concern are the capital ships – the Carriers and Amphibious ships. These receive specific programming of aviation assets according to their current role and programmes, as determined by Fleet and can take into account the greater experiences of embarked aviators. However, the normal *modus operandi* for the escort shipping, Frigates and Destroyers (FF/DD), is for “Cap Tallied” or dedicated and integrated flights from 815 and 829 Squadrons to remain allocated to each unit. This allows personal relationships to build between ship staff and their flight personnel, so that teamwork can build and strengths and weaknesses

⁶² Ministry of Defence Comptroller and Auditor General: *Battlefield Helicopters HC 486 Session 2003 – 2004*, 7 April 2004, 4.

can be catered for with familiarity, to overcome the lack of aviation expertise. It is of note that aircrew experience in this single pilot aircraft can be very limited⁶³.

Under this planning constraint, with the current construct of flights, there are just enough flights to cover the 25 FF/DD hulls. Although there is a planned reduction in escort ships, with the advent of Type 45 Destroyers⁶⁴ to replace the aging Type 42's and the ultimate decommissioning of the Type 22's (three ships), the introduction of Future Lynx will see a dramatic cut in the number of flights available. The planned greater availability of Future Lynx is unlikely to make up this shortfall. Once deployed with a unit, an airframe will not be available outside that ship's theatre, and with fewer overall airframes a lack of redundancy is implied⁶⁵. In a single helicopter HQ this will only serve to increase the friction between competing priorities for these invaluable assets. In any event, the loss of flights cannot be allowed to create a situation where some units are gapped a flight altogether, leaving the ship exposed to attacks⁶⁶, as shown in Figure 4.

Recent experiences of U.S. warships in the Straits of Hormuz with the threat of Fast Inshore Attack Craft (FIAC)⁶⁷, show the need to retain a long range ability to deal a wide number of threats in the maritime environment. The ship's single flight aircraft not only gives early warning through over the horizon picture building

⁶³ This draws upon the author's experience as a Frigate Flight Commander (1996 – 1998) and Staff Warfare Officer (Aviation) (SWO(AV) to Flag Officer Sea Training (FOST) (2000 – 2002) with responsibility for aviation training and checks on RN and Foreign Capital Ships, Frigates and Destroyers.

⁶⁴ When Type 45 enters service in 2009 it is anticipated that it will have a role in projection of force inland. This is facilitated through the intended fit of cruise missiles and by use of the Lynx Helicopter and FASGW.

⁶⁵ In some cases it may prove to be possible to embark additional crews in the already limited accommodation of the ships to generate more flying hours and therefore produce greater availability for the command in theatre. The analysis of flight numbers versus escort units has not taken place yet. The mitigation of fewer escort ships requiring fewer flights can only go so far in that a minimum number of aircraft are needed to self sustain the overall Lynx fleet through deep maintenance cycles.

⁶⁶ Lynx currently retains an appropriate radar and air-surface missile system in Sea Skua that is optimised to deal with these threats.

⁶⁷ Iranian harassment of U.S. Ticonderoga Class Frigate in the Gulf as reported by CNN on 9 January 2008.

(search, detection and identification), but allows early prosecution when required.

This only further serves to reinforce the criticality for Frigates and Destroyers to retain their organic air⁶⁸. Fleet's bottom line would be that greater flexibility for JHC cannot be allowed to undermine escort shipping – aviation training and safe operating.



Figure 4: FIAC, Asymmetric Attack and Lynx Operations Countering the Threat

The spreading of fewer airframes more thinly across the needs for helicopter assets, leading to a programming issue of ships flights, is not the only significant issue that restructure under JHC would have to deal with. To keep available airframes with operationally deployed ships the potential is to gap some ships a flight during lower

⁶⁸ Organic air is defined as that which is embarked on the unit and which can be operated autonomously.

priority tasking. Allocating flights separately will need to be resisted, as this may undermine safety through poor integration during training. This can be compounded further by differences in RN and Army procedures.

This is of particular note with respect to Quality Assurance⁶⁹ (QA), as indicated by the poor resourcing of JHC in engineering support. From a historical context this is well reasoned by a look at the environments in which helicopters have operated. The sea is a highly corrosive and less forgiving environment, especially in terms of places to land a malfunctioning aircraft. Therefore it demands an even greater degree of engineering quality control for maritime aircraft. Whatever the historical reason, there needs to be common agreement in the future, for air worthiness considerations, whether or not maritime helicopters are subsumed into the JHC organisation.

Latest technologies mean that the Army is now operating more complicated and capable aircraft than ever before, and the paucity of assets, in particular the lack of a land attack helicopter in support of the Royal Marines in the RN inventory, means that initial trials for embarking Apache (Figure 5) have been completed. This shows that it is not a “one way street”, and that land helicopters are now more likely to operate routinely from the sea, as well as maritime helicopters having applicability over the land. Consequently, the differences in approach to helicopter engineering requirements need to be ironed out regardless of the way ahead for Fleet HQ and JHC. Further integration will only serve to facilitate the resolution of this issue.

⁶⁹ Quality Assurance involves the process and actual “checks and balances” employed to maintain safety and airworthiness of aircraft and associated maintenance procedures.



Figure 5: Apache AH embarked HMS Ocean 2002

A pressing organisational change that needs to be accounted for is that of the Directorate of Army Aviation (DAAvn) and JHC. At present, DAAvn is programmed to merge partly with JHC and partly with the School of Army Aviation (SAAvn). Most significant for the Army Air Corps' Apache, is that it will again raise the question of quality control – with respect to engineering and flying standards. In order to determine engineering requirements, the Attack Helicopter Integrated Project Team (AH IPT) deals directly with both JHC and DAAvn. DAAvn is the “Release to Service Authority” which has an engineering and airworthiness responsibility when it comes to modifications. DAAvn also has control of the flying standards. Together they are designed to ensure aircraft standards and practices are maintained, and that aircraft are maintained within regulations of civil airworthiness standards and safety. There is an additional complication in that all Army air engineers are Royal Electrical and Mechanical Engineers (REME) so they are not so well integrated to the operating arm – the Army Air Corps. Therefore they have far less representation in the command HQ, DAAvn, than the other two Services. Whilst SAAvn is most able to

take on the flying standards side, the engineering side has no easy place to reside in the new organisations.

This engineering issue will need to be worked closely, because there is also a significant difference in the autonomy of QA in units within the Army from those in the RN. Currently the Army have no Typed Air Station (TAS), nor Air Station support, and are designed to deploy as a whole. This structure may change, however, with the development of the Apache super base at Wattisham. As a result, QA in AAC units is lower,⁷⁰ and given the higher risk in operating from the sea, the loss of the RN QA system could have a significant impact. Conversely, while a greater QA standard for the Army is not necessarily a bad thing, there is an inevitable increase in cost involved. Without adequate 2nd / 3rd party audits, the units' 1st party auditing usually fails. Experience from Army Work Recording and Asset Management (WRAM) and several maintenance issues across other units substantiate this concern. The Army may have Techevals, similar to RN Performance Assessments (PA) every two years, but this is not the same as a sound QA system.

Experience⁷¹ has also seen an inflexible attitude from JHC, due in part to the constraints of resourcing and the needs of the operational environment, as opposed to personality driven. Given the way the RN tasks units, this would have to be addressed in a combined HQ. The J3/J4 chasm affects day to day work, exacerbated by an equally disparate AAC/ REME. Manpower shortages in J5 have also caused the Urgent Operational Requirements (UOR) programme significant problems; a bottle-neck not experienced with Fleet who hold support structures and have operator desk officers who will be working the issue. Although the calibre of JHC desk

⁷⁰ Discussion with Cdr D Bartlett RN AH IPT.

⁷¹ Experience was gained from the author's previous appointment to DAAvn and dealings with JHC and is confirmed by RN colleagues that have recent direct liaison.

officers is very good, the capacity of the HQ has often been inadequate⁷² to deal with the lack of assets and the needs from two significant conflicts. The issue then is not to combine Fleet aviation into a “bankrupt organisation”, such as JHC, unless this is resolved. Best practice of Fleet AV structure too is maintained such that the needs of the environment remain correctly supported.

JHC, like many military units, is poorly resourced for what it tries to achieve, therefore if the intention to combine Fleet Aviation (AV) and JHC comes with the resources to match, the plan remains sound⁷³; albeit that in levelling the resources playing field, the risk is that RN units get less support that they enjoy at the moment. As ever, resources in Fleet HQ are also a concern so release of any assets will prove to be a thorny issue.

⁷² Subjective argument depending on where you sit in the organisation and the view thus represented.

⁷³ Subjective opinion from discussion with Cdr D Bartlett RN, an experienced RN Air Engineering Officer and pilot working in close liaison with JHC and DAAvn as part of the AH IPT.

Future Helicopter Basing – Project BELVEDERE

In 2003, Project BELVEDERE was established in order to rationalise the number of airfields across the UK. The project, based at JHC, continues to examine the basing of all military rotary wing assets today. In order to rationalise, the study is looking at the location and integration of current and future rotary wing fleets. Therefore it is important to recognise this ongoing work and postulate the affect the development of JHC to a single helicopter controlling HQ may have.

Looking at the Army force, with Lynx integration, at the time of going to print the following decisions have been⁷⁴:

1. The army's Apache helicopter units will co-locate at Wattisham Airfield by September 2007.
2. Two AAC Lynx squadrons from Wattisham will be exchanged with 2 Apache squadrons from 9 Regiment at Dishforth.

This will mean that a single base of Apache aircraft will be formed in the East of England, with all AAC Light Utility Helicopters (LUH) of Lynx 7/9 largely based in the North of England (Dishforth).

Currently all Fleet Air Arm Lynx (Mk 3 and 8) are based at Yeovilton, in the South of England. With the June 2006 announcement⁷⁵ of Future Lynx numbers, there will be a drastic reduction in the size of the overall Lynx fleet. Inevitably this will have an impact on the continued operation of both Yeovilton and Dishforth. Alluding to this, Major General Gary Coward (Commander JHC) talked about proposals to house the whole fleet of Future Lynx at one super base to provide

⁷⁴ Tim Ripley, *British Army to create Apache 'super base' base*. Jane's Defence Weekly. 21 March 2007, 1.

⁷⁵ Secretary of State for Defence, *House of Commons announcement*, 22 June 2006.

operational and maintenance efficiencies⁷⁶. He explained in terms of Army LUH aircraft, that although the plan was to replace the AAC's 80 Lynx 7/9, with 40 Future Lynx, the same number of flying hours must be achieved. To do this, Future Lynx would need to deliver 400-500 hours per annum against the 200-300 hours a year currently being flown per airframe. In order to achieve this, savings in time must be taken against maintenance cycles. To put all Lynx at one base would allow the appropriate increase in engineering efficiency and provide flexibility in terms of aircraft redundancy to produce the desired flying hours needed⁷⁷. Although the modern airframe will give increased ratios of flying hours to maintenance hours, Major General Coward is talking about forming a centrally maintained Lynx pool to achieve the required targets. It is argued that in order to deliver such a flying rate, (for both AAC and Fleet Air Arm) a centralised maintenance line, flight line support and training pipeline must be formed. These are clear implications for project BELVEDERE to consider when looking at that the decision on where this base is to be located. Under these new demands, to ensure greater coherency, and with the inevitable advent of closer links between land and maritime assets, this study proposes that one central command, JHC, would be best control the whole fleet management in this new set up.

To form a super base, but leaving the current construct of programming in both Fleet HQ and JHC, would not help to produce the operational and maintenance efficiencies required. Notwithstanding the need to retain programme control for aircraft allocation to ships, the detailed planning and continuous assessment of needs

⁷⁶ Tim Ripley, *Interview with Major General Gary Coward – UK propose “super base” for Future Lynx*, *Janes Defence Weekly*, 30 August 2006, 1.

⁷⁷ *Ibid.*

from both Services demands closer ties, greater understanding of the requirement, and co-location of the effort.

In addition, the earlier centralised command is achieved; the sooner there will be unified direction to the Defence Equipment and Support (DE&S) agency for the development and introduction of Future Lynx. Lynx airframes across all fleets are currently running out of hours, so timely establishment of a new HQ will mean clear direction to DE&S and the Lynx Integrated Project Team (IPT). Of course the location of the Future Lynx super base remains part of JHC's Project BELVEDERE, which ultimately aims to restructure the command's estate from its current nine bases down to four or five. Again an early merger of Fleet and JHC helicopter programming and planning will help facilitate any decision.

One further difficulty was seen to hamper the DE&S's (previously DLO) goal of ensuring helicopter availability – the provision of airworthy helicopters to the front line. The main issue here is that the maintenance at the front line is carried out by units themselves in several locations⁷⁸. This does not help DE&S in structuring to support similar aircraft types, thus restricting them to improvement by setting maintenance policy and providing spares and expertise only – essentially the disparate location of aircraft types is counter productive. Rationalisation through a single HQ, and co-location of similar airframes at one airfield, can only help this situation.

Overall, the study which focuses on MOD's six main established helicopter fleets, comprised of some 470 helicopters with a logistic support cost of £260 million a year (in 2002), have several recommendations which remain to be fulfilled. A single HQ would facilitate the Defence Equipment and Support (DE&S) agency, and its front line customers, to develop a consistent regime for measuring outputs and

⁷⁸ Ministry of Defence Comptroller and Auditor General, *Helicopter Logistics HC 840 Session 2001 – 2002*, 23 May 2002, 2.

performance. It would aid in more effective business management for DE&S to obtain better data covering assets (the numbers by stocks, their condition and where they are located) by introduction of a higher level single point of contact that will also drive co-location issues of Project BELVEDERE to a swifter conclusion. The introduction of a single customer to DE&S with respect to helicopter operations, would help inform DE&S to benchmark the quality and timeliness of its management information to increase the robustness of its contractual arrangements with best practice in industry. It would also ease the burden of prioritising various management initiatives and enable better dissemination of good practice for DE&S. This is synonymous with the issues that are being looked at by project BELVEDERE.

In summary, the current state of the project recognises the importance of helicopters and their logistical arrangements in support of the MOD's defence tasks. It notes that with "even a small percentage increase in the numbers of helicopters available this will have a noticeable impact on exercises and operations"⁷⁹. A unified HQ acting as a single customer will provide significant gain to the overall effort to achieve this.

⁷⁹ *Ibid*, 6.

Jointery

It is known that success in modern warfare depends on joint teamwork; battles and wars are won by maritime, ground and air forces operating effectively together in support of shared military objectives. Military co-operation is based on team spirit and entails the co-ordination of all units so as to achieve the maximum combined effort from the whole⁸⁰. Goodwill and the desire to co-operate are essential at all levels and this is promoted by Jointness. The increased interdependence of the Services, other government departments and the growing mutual dependence on the Armed Forces of allies and coalition partners, has made co-operation between the Services of vital importance in modern warfare. However, “Can we go too far in the name of Jointness, or can one size fit all?”⁸¹ are questions that need to be asked in order to consider the merits of single service specialities versus a fully joint or multi-purpose force. The argument is not one of extremes – either entirely unique capabilities or fully multi-purpose forces. As with most solutions, the answer is likely to be a balance where forces are fully integrated but still recognisable for their own specialities, able to operate seamlessly together.

With respect to land forces, there is much debate on whether units can develop with adequate multi-functional capability, or retain more costly structure of special purpose forces. Single scope organisational solutions are likely to create vulnerabilities rather than mitigate them. In essence, where within Jointness is the line between the Services moving towards a “jack of all trades and master of none” concept, and the need to retain vital core competencies. In examining the

⁸⁰ Ministry of Defence, *JWP 0-01 British Defence Doctrine 2nd Edition*, 08 January 2007, 3-3.

⁸¹ David A Fastabend, *Transformation and Operational Art*. U.S. Naval Institute, Annapolis Maryland. 2005, 164.

amalgamation of helicopters into JHC, this underlying argument of balance between multi-purpose forces and those with a particular skill set must be maintained.

The U.S. Department of Defence (DOD) model in Figure 6, articulates the process of transformation in the U.S. Armed Forces from once stovepiped structures. Originally, forces were deconflicted for operations, but have developed through Jointness towards interdependency, where co-ordination and integration takes place within commonly understood doctrine. Although the U.S. Armed Forces have reached a state of integration in many areas, the goal is to continue to the right in the diagram where both interagency and coalition forces are mutually supporting across all operations. The drive for this has been the advancement of irregular warfare and development of more expeditionary forces – seen in both UK and U.S. policy. The idea is to produce commonly understood procedures and practiced organisation in order to achieve defence missions, whether of a national or international security nature. This provides for coherent implementation of the DIME (Diplomatic, Information Military and Economic) across the spectrum of conflict. The achievement is based on a common lexicon, providing meaning known to all, and intermeshed Standard Operating Procedures⁸² (SOPs), but retains the strengths of individual organisations. The result is unity of command and the correct authority with which to act. The advantage of such an achievement is that interoperability, cross organisation understanding and communication are improved where best practice can be more easily identified and adopted. This serves to drive out duplication, significantly improving efficiency, reducing cost and increasing effectiveness.

⁸² Standard Operating Procedures (SOPs) or Tactics, Techniques and Procedures (TTPs) form a common base, which allow organisations to understand one another, provide a common framework to be able to work together and engender all to complement each other in order to achieve a common goal.

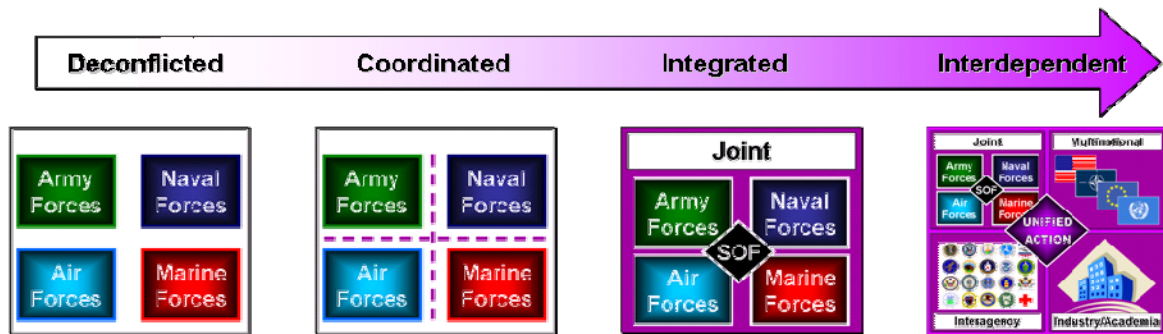


Figure 6: The Process of Joint Development⁸³.

The UK's approach to Jointness is somewhat different – where full integration across a functional area, such as helicopters, is driven by adoption of a joint only organisation. This serves much the same purpose, but there is the added danger that the joint force will lose its service-specific core competencies and expertise over time. This could mean that skills in a particular environment could diminish or, worse still, lost as they are driven down the order of priorities under a resource constrained background. Striking the balance incorrectly, by making savings or lack of investment, may actually mean that the ability of the joint force to operate across the spectrum of conflict is reduced. Enduring operations in a particular field, such as Irregular Warfare, may actually reduce MOD capacity in other areas. Prolonged operations in that area, during transformation, may lead to inappropriately organised and poorly trained elements which lack the range of specialist skills to prosecute traditional warfare. The idea of a functional HQ for helicopters will only strike the correct balance of jointness provided it is manned equally with personnel from each environment. In order to integrate well it will take time to develop personnel who understand each other's fields of expertise.

⁸³ Adapted from Capabilities and Transformation lecture JAWS 6304, 1 October 2006.

The relative size of the British Armed Forces in comparison to the U.S.'s, allow them to adopt wholly joint organisations and adapt quickly to the changing nature of warfare. However, the area of procurement remains similar in terms of timescales, so needs to be watched more closely. Prolonged prosecution of expeditionary and Irregular Warfare, and therefore adaptation to it by the joint force, may produce lighter and more agile forces, but it also produces much compromise. Procurement of new equipment is a long winded process where limited resources and finance mean that capability trade off is rife. The trade off and compromise is made in order to make new equipment more affordable, or to serve an immediate need. An element of this has already taken place within JHC where the Army's Apache helicopter, for example, has completed sea trials and embarked on HMS Ocean. This dry joint aircraft was not built for ship borne operations, so a number of risks have been taken and money has been spent on "work around" solutions in the adaptation of the aircraft to the maritime environment. Should the aircraft need to be employed from a sea base, a higher degree of operating risk will be required. Examples of this include a canopy explosive escape mechanism that is not designed for underwater activation, and the narrow wheel base and high centre of gravity that have led to limited ship pitch and roll limits for operating the aircraft. Greater operating risk means that prolonged operation at sea is undesirable for this aircraft; even short term operations will increase maintenance routines and reduce the life of the airframe. Additionally, initial trials have not been followed up due to the tempo of operations in Afghanistan, where the need for the Apache has been greatest. Since this capability is not regularly exercised, it cannot be immediately called upon. It will take both time and money to regenerate.

Organisational change under limited forces structures and prolonged prosecution in a single area of warfare must be done warily. For example, the reorganisation of Apache force structure, which has taken place in the name of more flexible use of those few assets, may have already limited the Army in the execution of high intensity conflict during large scale operations. The British Army has only six Apache squadrons, each with eight aircraft. The previous structure of three Attack Helicopter Regiments, each with two squadrons of Apache and one of Lynx, were not supportive of the additional needs for Amphibious Operations and support of Special Forces. Consequently the regimental structure has been broken down to provide a single Apache super base where smaller units can be deployed. These are task organised in a more flexible, expeditionary, approach to operations. On one hand, this is positive since it provides a more pliable AH Apache force for employment across a wide range of operations. On the other hand, the compromise undermines the Battlegroup Manoeuvre Formation of the regimental system, making prosecution of high intensity, large scale operations more problematic. The opportunity to cut support and command structure when forming the super base has caused this.

In the structural change to JHC, an opportunity to make cuts on manpower must be resisted. An already lean manned JHC must be correctly augmented to allow for the additional function of maritime aviation. To provide additional maritime helicopter assets, without the people familiar with their operations, will compound the issues of limited helicopter assets and not help matters. Should this not occur, the government will have to be constantly reminded of the additional risk that has been taken and the current capabilities that exist⁸⁴.

⁸⁴ It is already contained within the DWP policies as an assumption (factor 2 of footnote 20) and therefore accepted risk. A constant review is thus required in this regard.

Process for Change

The challenge to effect change is not to be underestimated. Military history is riddled with examples of change as articulated in the “Challenges of Change” articles by Harold Winton and David Mets⁸⁵, where advances in technology and political posturing are seen as the main drivers. In the articles, reform of the French Army during the inter-war years is discussed. Whilst some of the significant changes occurred in response to new technologies, the majority were brought about by government changes and the interpretation of French public opinion at the time.

Equally, in today’s military it is insufficient to identify change and then expect it to happen. Rapid advance of technology has created much change and adaptation to the evolving nature of warfare through emergence of new threats, and has meant that change has become part of the British military culture. The requirement is more to identify the areas that have greatest need for change and implement the more significant ones. In the case of helicopter HQ structures, the Strategic Defence Review of 1998 recognised the issue of organisational inefficiency. This was then mitigated by the establishment of JHC, however the later National Audit Office report⁸⁶ still recognised that more can be done. In this report further solutions were not proposed, and there is no suggestion that there will be further investigations to make improvements in this area.

Innovative changes must be able to deal with the ongoing lack of helicopter assets and demonstrate a significant improvement. The proposal in this study tries to provide flexibility, by allowing rapid reallocation across land and sea assets as

⁸⁵ Harold R Winton “Tanks Votes and Budgets: The Politics of Mechanization and Armored Warfare in Britain, 1919-1939.” In *The Challenge of Change: Military Institutions and New Realities, 1918 – 1942* (74-107). Edited by Harold R. Winton and David R. Mets. University of Nebraska Press, 2003.

⁸⁶ House of Commons Committee of Public Accounts, *Battlefield Helicopters Eighth Report of Session 2004 – 2005 HC 386 incorporating HC 1191-I, Session 2003 – 2004*, 18 March 2005.

required by current priorities. A more comprehensive organisation, in terms of helicopter resources, that is able to make greater use of limited assets is the aim. Thus the first part of the problem – identifying the change has been articulated. Where change in the military has become normal, constant and often far reaching, the priority for this change is yet to be identified. What is important, then, is to demonstrate that the need for this structural change is greater than other issues in order to elevate it to a level where it can be actively engaged.

There are 2 ways in which change to Fleet and JHC HQ responsibilities can be brought about. First, the priority for the change will attain a level where, through government process of National Audit Office and House of Commons reports the change is ordered – the military will then take action. It is not believed that sufficient need or crisis has yet been demonstrated in order for this to take place. In this case the need for more rotary wing assets on current operations, particularly in Iraq and Afghanistan, has not reached a critical threshold where the answer is formal assimilation of maritime helicopters to provide relief in the margins. It is believed that with the recent draw down in these operations, the pressure for more helicopter assets has passed its peak and public opinion on the subject has died away for the time being.

Additionally, significant further investment in Defensive Aid Suites and improvement in aircraft performance to operate in “hot and high” conditions⁸⁷ has not yet taken place to make this a complete solution. What is demonstrated by this paper is that, with the current helicopter procurement plans, the point of amalgamation is rapidly approaching. Now is the time to look at the changes to HQs, so the MOD can

⁸⁷ Helicopter performance is greatly degraded in hot and high conditions which reduce air density so that the improved engine efficiency is by far outweighed by a reduction in overall aircraft performance due to the poor effects on rotary wing aerodynamics.

be proactive in making the best possible use of the helicopters as they come into service.

The second avenue to effect this change involves the need to build popular support. This is time consuming and has much to do with what else is going on, inter-Service rivalries and faces entrenched positions of ownership. For the RN, most significant is the development of the new Aircraft Carrier (CVF)⁸⁸. For the Navy this is crucial business as the UK government commitment to this forms the centre of naval forces for years to come, giving a truly expeditionary and maritime strike capability into the 21st Century. This will ensure maintenance of minimum numbers of escort Frigates and Destroyers to provide protection, support and theatre entry. It cascades throughout all areas of the Navy for support operations, logistics, etc. In building popular support, it is not only the genesis of an idea, but the timing at which the idea is presented.

General Donn Starry articulated the process of change well during a keynote speech to the U.S. Army War College Committee on 10 June 1982. He postulated that “Reform of an institution as large as our (US) Army is problematic under the best of circumstances”⁸⁹. In his presentation of change, he used the German Army as an example and offered three requirements that were necessary to effect that change.

First, there needs to be a general staff whose primary function was to examine change. This is similar to the MOD use of the “Lean Process”, and now ingrained culture of transformation. Secondly, compelling logic and training makes arriving at a consensus easier. While the UK Services today embrace great latitude in judgment,

⁸⁸ The first of 2 new aircraft carriers, HMS Elizabeth, is planned to enter service in 2012 with the second in 2015.

⁸⁹ General Donn A Starry U.S. Army, *To Change an Army*. Address to U.S. Army War College Committee on a Theory of Combat 10 June 1982. Reported in: Military Review: “The Professional Journal of the U.S. Army” March 1983, 21.

there is certainly like minded thinking borne out of many accepted joint organisations. Importantly, a single joint service higher command and staff course⁹⁰ for the development of senior managers gives good momentum to this area. Third, is that the principal instigators remain in key positions relating to the implementation of the changes they espoused. In the “Vigilant Warrior” article about General Starry, Lieutenant Martin D’Amato identified “vision, advocacy and direction”⁹¹ as vital characteristics to a leader in this process. The recent announcement⁹² that Commodore Simon Charlier (a previous Commodore Fleet Air Arm) is to be promoted Rear Admiral, and be placed as Staff Aviation Officer for the new aircraft carrier, is an indication of where the RN is with respect to air power and the relative importance of aviation to current operations. This may be fundamental to elevating this topic further up the hierarchy, in order to gain the priority it needs.

In recounting a set of generalised conditions for effecting change, the cycle grows as follows⁹³:

- A mechanism exists to identify change – transformation and the proposal here.
- A common cultural bias to the solution of problems – the solution of jointery.

⁹⁰ For a number of years now there has only been one course for all military senior officers and civil servants to attend – Advanced Command and Staff Course (ACSC) at the Services’ Joint Defence College at Shrivenham. This breeds common logic and develops relationships in the area of MOD higher management.

⁹¹ First Lieutenant Martin J. D’Amato, *Vigilant Warrior: General Donn A. Starry’s Airland Battle and how it changed the Army*, *Armor: The Professional Journal of the Armor Branch*. May-June 2000, 19.

⁹² MOD Galaxy Briefing Notice 42/07, *Chief of Staff Aviation (COS AVN)*, ACOS (R&P), 14 December 2007.

⁹³ General Donn A Starry U.S. Army, *To Change an Army*. Address to U.S. Army War College Committee on a Theory of Combat 10 June 1982. Reported in: *Military Review*: “The Professional Journal of the U.S. Army” March 1983, 23.

- There must be a spokesman for the change – a significant proponent of the change able to carry it through (see below section).
- The spokesman must possess the ability and courage to build a consensus – by awareness of timing and leadership.
- Continuity among the architects of the change so that consistency of effort is brought about on the process.
- Buy-in from senior leadership – someone near the top of the institution.
- Finally, change proposals must be subject to trials – more likely, in modern resource constrained practices, a business case to determine the cost-benefit analysis.

With respect to the proposed restructure of Fleet HQ and JHC the outstanding need in this cycle is to socialise the intent, build consensus and support. When building sufficient weight of opinion to affect such a change to aviation structures timing is crucially important. At present it is recognised that there may be some resistance to the idea founded on recent exposure to similar changes within the Fleet Air Arm. The experiences of Joint Force 2000⁹⁴ and the amalgamation of the RN's CHF into JHC, under UK Land, has not been an easy process. To "sell out" the rest of the Fleet Air Arm at this time might be seen as ill conceived by some. In further development of the joint organisation JHC, as the next stage of evolution, it may be perceived that this latest proposal could be a step too far. It is important to realise and anticipate this, yet continue to float the concept as the cycle of change grows momentum. Thus the change may not be immediately appropriate, but given more time for joint organisations to bed in, when the advantages of such become more obvious, support is likely to grow.

⁹⁴ The transfer of RN and RAF Harriers to a Joint Command under RAF Strike group.

In affecting change several similarities can be drawn to the issues confronting General Starry and the problems he encountered in progressing the U.S. Army from Active Defence to Air-Land Battle. Whilst strong leadership was an essential factor, Starry cited the need for an institution, or mechanism, from which many areas can embrace the change. Influence from all quarters was seen as important to make change happen; the supporters need airing and the critics need convincing. Doctrinal, training and operational issues are identified as key areas that should be brought into line or, at least, support the change. It must be both the employer and end user that want the change or see it as a significant improvement.

In concluding his paper “To Change an Army” General Starry assesses that the need for change will ever be with us⁹⁵. We may have analysed the process, framed its essential parameters and made some considerable progress toward arming ourselves with systematic mechanisms to permit change to take place, but in no way does it ensure that change will occur or that it will be easy or orderly process. And so the intellectual search, the exchange of ideas and the conceptual maturation must continue and be ever in motion⁹⁶.

There is recognition too, that large organisations are slow to change, having established a need, time is required to socialise the plan, refine it and gain popular support from within the organisation. For all this to happen there needs to be either government direction or strong leadership. Of course the cogs of time now need to turn to ensure the timing is right.

⁹⁵ *Ibid*, 27.

⁹⁶ *Ibid*, 27.

Will the Government Order the Change?

It is recognised that the 1998 Strategic Defence Review established the increasing significance of joint forces, setting the trend of the joint approach throughout defence⁹⁷. A joint approach to the front line, command structures and support areas has since proliferated. Why then, is the government not grasping the opportunity to join helicopter HQs? This section intends to examine possible reasons why the change has not already occurred in order to provide a balance to the argument for the change. Is it a function of the cost or timescales involved to complete a restructure, too many other higher priority issues taking place, have they not considered it or is there another argument against such a proposal? Surely the concept of using joint forces, with the three Services operating together, is more important today as the traditional distinctions between operations purely in the maritime, land and air environments merge.

The arguments for jointery, or jointness, sound convincing, but they need to be considered under economic viability for the government and the taxpayer. Economists would approach the subject by focusing initially on the “defence economics” problem and the need for difficult choices in a world of uncertainty⁹⁸. It is important to identify the range of choices available, together with the drive for jointery, and to subject these claims to economic analysis, empirical testing and critical evaluation. Jointness is not a new invention, but until recently, it was implemented on an *ad hoc* basis for a particular period of conflict.

⁹⁷ House of Commons Research Paper 98/91, *The Strategic Defence Review White Paper*, 15 October 1998, 27.

⁹⁸ Professor Keith Hartley, *The Economics of Joint Forces* Centre for Defence Economics, University of York, transcript available: www.york.ac/depts/econ/documents/research/jointery, 1998, 1.

Hartley identifies two major arguments for jointery⁹⁹. First, the Armed Forces together provide a greater capability (effectiveness through flexibility) than the sum of their individual parts. Secondly, joint solutions offer efficiency savings through rationalisation and the elimination of wasteful duplication. Nonetheless, continued emphasis is placed on the need to retain the individuality and separate identity of the three Services and their specialist skills, ethos, loyalty and commitment. For example, one option considered by 1998 Strategic Defence Review¹⁰⁰ was to transfer all battlefield helicopters to a single service – the RAF. However, it was the counter argument that the advantages gained by merger of the Services would be outweighed by the damaging impact it would have on ethos, morale and operational effectiveness. This can be confirmed in the example of the Canadian Armed Forces which tried this merger to then split again to individual Services.

Despite the prominence of more jointness, the MOD and government position continues to emphasise the strengths of the single Services, and so it is not envisioned that there will be a proposal to amalgamate the three Services into a single defence force. A “defence economics”¹⁰¹ issue thus arises because the Services have a greater demand for procurement, more personnel and improved infrastructure, than the resources (budget) available for defence. The argument of “doing more with less” and “stretch of forces” is well known. The difficulty is to identify metrics in which to quantify what is needed. Employment of the operational vignettes of small, medium and large scale operations goes part of the way, but there is huge subjectivity when articulating numbers and capability required in response to this. The problem is

⁹⁹ *Ibid*, 2-3.

¹⁰⁰ House of Commons Defence Select Committee, *Strategic Defence Review HC 138 1997-1998*, 3 September 1998, 16.

¹⁰¹ Professor Keith Hartley, *The Economics of Joint Forces* Centre for Defence Economics, University of York, transcript available: www.york.ac/depts/econ/documents/research/jointery, 1998, 3.

accentuated by falling defence budgets, rising equipment costs and on going operations, but to what degree and with what impact is not well defined. Inevitably, the dual pressures of falling budgets and rising unit costs mean that difficult defence choices cannot be avoided: something has to go and the question is: What goes?

There are three broad choices for defence policy-makers and the British government¹⁰². First, a further major defence review of the UK's commitments, such as Strategic Defence Review II, to re-examine the Armed Forces worldwide role and the commitment/ability to provide a complete range of modern air, land and sea forces. This is politically sensitive and with a relatively new Prime Minister, and a government up for re-elections likely in the next couple of years, an improbable event. Second, the "fudge it" option, or a defence review by stealth, achieved by Armed Forces self limitation due to imposed interplay between budget and resource demand. This will require the Services to make priorities and savings by doing less training, delay new equipment programmes or running-on old equipment. This is the most likely course of action until demand forces a return to option one. Third, improvements in efficiency leading to higher productivity, as seen by smart procurement and public-private partnership initiatives. Some of which have already taken place, but there is a limit. Overall efficiency improvements might mean that it is possible to achieve the same level of defence "output" at a lower cost, or a higher level of capability from the same expenditure. In this context, joint forces offer value for money by maximising defence capability from a limited budget and/or providing cost savings through rationalisation, reduction of duplication and increased economy from shared training and support activities such as seen though the changes in defence logistics.

¹⁰² *Ibid*, 3.

The lack of available data means that HM Government and taxpayers do not have the statistical information needed for a balanced discussion about the UK's joint forces, leaving the argument to subjective claims. In effect the Services are monopoly organisations relying on rule-based decision-making. Therefore it is worth a brief look at the private sector to see if there are any lessons for the Services with respect to jointery.

In commercial organisations, where profit is the aim, there is a never ending endeavour to reduce costs. Greater economy can often be brought about by a change in structure to build a new firm or by merger with another. Pressure to achieve this comes from market competition, so that the most efficient produce the highest quality products at the lowest price, and therefore are most likely to have the greatest profit or sustain operations longer. Consequently, in private enterprise economies organisations do not remain static, they will be subject to continuous change as they strive to be competitive. In this form, the private enterprise model has implications for jointery and already some parallels with the Services where the only constant is constant change.

In commercial companies, the pursuit of profits and the desire to economise determines the extent of jointery, including the size of the organisation together with specialisation. Mergers are the private sector's equivalent of jointery and they involve both benefits and costs¹⁰³. The benefits of mergers include lower costs from rationalisation, from achieving economies of scale due to a larger output and from economies of scope from producing two or more activities in one firm. However, mergers also involve costs through the creation of a monopoly often leading to higher prices, a lack of modernisation and inefficiency.

¹⁰³ *Ibid*, 6.

Wholly joint views will be supported by the Services if they offer a good means of obtaining funds in an era of tight defence budgets. Jointness can be presented as a means of “maximising military capability” and of achieving efficiency savings from “rationalisation and co-ordination, so freeing up resources for other defence priorities”¹⁰⁴. Jointery creates opportunities for all three Services to combine and conspire to influence government policy in their favour. Jointery can also be used to justify and support major single service equipment programmes which might not be approved on a single-service basis. For example, combined RAF and RN support for the Joint Strike Fighter aircraft and the associated aircraft carriers for the Navy. To economists, jointery resembles a cartel and monopoly situation. So the counter argument to jointery is that successful capitalist economies prefer private markets rather than state ownership and central planning, where competition is preferred to a monopoly. Applying these principles to the Services and jointery suggests the scope for inter-service competition. Defence ministers, civil servants and politicians are at an information disadvantage compared with the expertise found in the Services and their staffs. Competition and rivalry between the Services offers civilian defence managers a useful conduit in order to help government delineate between priorities, particularly with respect to procurement.

To the government there are at least three tangible benefits¹⁰⁵. First, inter-service competition generates vital information. For example, the RAF might divulge far more information than the RN about the vulnerability of the Navy’s new aircraft carriers. Second, inter-service competition gives civilian defence managers some bargaining power in confronting senior military officers when seeking to control defence policy; it allows them to play one Service against another when particular

¹⁰⁴ *Ibid*, 6.

¹⁰⁵ *Ibid*, 8.

policies are preferred. Third, inter-service competition provides an incentive for innovation other than jointery being the answer to everything. Rather than compete, the Services prefer to work together for mutual benefit, allocating budgets on basic needs and the view from the joint organisation, thus more jointery merely facilitates this by creating a union and facilitating collusion.

The Services are likely to be against competition sighting internal costs and wastes of competitive duplication and by emphasising the apparent benefits of jointness. Agreement between the Services is most likely when difficult choices do not have to be made. This may not be the case when one of the Services recognises that its vital interests are threatened by budget cuts and the need for more reductions in its front-line strength. In this context, Hartley has concluded that “there is no better spur to candour, error correction, and creativity in defence planning than a very tight budget and a few smart rivals competing for budget share”¹⁰⁶.

Another limitation of inter-service competition is that it is restricted to the established military. Competition in the commercial arena allows fresh entrants; another company can set-up or develop into an established firms area providing a further competitive stimulus in the market in turn leading to change and innovation. For the Services innovation has to be promoted from within since it is a closed market. Any new technology has to be promoted by one of the Services where a revolution in equipment might increase inter-service competition as was seen by the Army and the RAF competing over the ownership of Unmanned Air Vehicles (UAVs). Complete jointness does little to promote this healthy inter-service competition.

¹⁰⁶ *Ibid*, 9.

This is not an entirely one sided argument against jointery since competition may not be desirable for the government, whom will have to decide winners and losers. Competition for a new equipment project means that the government will be subject to lobbying by defence contractors, with added pressure from vote-conscious politicians who would prefer to share the contract between a number of companies across several of their constituencies. As a result, the UK government might avoid the difficult choices by allowing the joint force to come up with the solution, preferring instead a “quiet life” with the costs of such behaviour being borne by taxpayers¹⁰⁷.

This argument means that it is likely that the Services themselves will determine the appropriate level of jointness. Due to the complexity of issues it is very difficult for the government, or civil servants, to question such judgements by the Services. Thus it is down to collaborative efforts of Land and Fleet to suggest amalgamation in the helicopter area and build the case in order to convince ministers that benefit of change far outweighs the risk to government process. In assessing the future of jointery, defence policy-makers will always have to consider selecting the most efficient mix of joint and single-service forces from the available defence budget. As it stands it appears that the current policy is based on a case-by-case, ad hoc, approach and further jointery may involve investigation of gains and losses. Gains will be reflected in lower costs and greater military capability. However, if jointery is the military equivalent of a monopoly, then the government may wish to guard against it so that UK taxpayer does not pay more for defence. Thus it appears that the impetus behind developing JHC to a larger, joint organisation, will only come from the Services themselves.

¹⁰⁷ *Ibid*, 9.

Affordability and Timing

This paper has demonstrated benefits through greater flexibility from the amalgamation of Fleet Air Arm maritime helicopters into JHC and the potential for improvements in future aircraft procurement. However, the cost of restructuring and capacity of JHC has not been fully investigated. The point at which the introduction of new aircraft and the needs of current operations, leading to restructure of tri-service helicopter fleets under a unified HQ, have significant benefit over the cost of the change is a subjective measure. From the analysis, it is believed that this threshold, if not crossed already, is about to be crossed. The grouping of all Military helicopter assets under JHC will only serve to accelerate processes and drive more rapidly to the efficiencies that must be made with new aircraft fleets and more importantly lead to greater effectiveness sooner. A more cost-benefit comparison of such a structural change without a formal business case is very difficult.

Of course the issues discussed so far are internal to the Armed Forces and MOD, so what else may have an effect on this? When the wider UK government picture is considered, a fall in house market prices, a fall in UK shares, poor strength of Sterling in Europe and imposed interest rate cuts all point to a slowing of the economy. This is replicated in the U.S., which suggests of a worldwide slowdown and possible recession. Until the threat of recession is past there is not likely to be any additional funding to pay for the cost of change. Set against the backdrop of on going costly conflicts in Iraq and Afghanistan, in the pursuit of the Global War on Terror, helicopter HQ restructure may thus be ill advised at present. The likelihood of more money for the MOD to pay for the cost of change is very small. It is clear from

the recent pay awards¹⁰⁸ and media interest that public opinion is not focussed favourably, in terms of additional expenditure, upon the British Military as it has been for the past few years. Media interest, and therefore public perception, is currently engaged on overspend in defence budgets¹⁰⁹. Perception is that despite an increase in money, in real terms, for the Armed Forces significant procurement projects may have to be cut. Thus to the government the agenda of additional cost compared to benefit gained in helicopter HQ restructure is just lost in the noise. Should MOD and the Armed Forces determine the amalgamation of Fleet Air Arm helicopters with JHC as a priority it will have to be done within the current budget.

¹⁰⁸ MOD AFPRB, *The Armed Forces Pay Review signal*, 07 February 2008 announced a 2.6% pay rise.

¹⁰⁹ March 08 quote from the BBC "The Ministry of Defence's equipment budget is facing increasing pressure. The Ministry of Defence may be forced to sacrifice one of the armed forces' major equipment projects in order to stave off a funding crisis, MPs warned. The Commons Defence Committee said that the pressures on the MoD's equipment budget were so great it may prove impossible to resolve them simply by scaling back or delaying orders. The MoD has acknowledged that all the projects in its major equipment programme are coming under scrutiny in a "planning round" described as more "challenging" than any since the 1970s. Projects that could face cuts or delays include the Royal Navy's two planned new aircraft carriers and the Army's new family of armoured vehicles known as FRES (Future Rapid Effects System). However, the committee said that such expedients may not be enough and that it may be better to axe a whole project. It also called on the MoD to explain why it found itself in such difficulties with its equipment programme at a time when the overall defence budget was increasing in real terms. "The MoD needs to take the difficult decisions which will lead to a realistic and affordable equipment programme," it said. "This may well mean cutting whole equipment programmes, rather than just delaying orders or making cuts to the number of platforms ordered across a range of equipment programmes." The committee pointed to two projects currently in the assessment phase - a new fleet of support tankers for the Navy and a replacement for the Lynx helicopter - which could be vulnerable if there were wholesale cuts."

CONCLUSION

The development of JHC since inception in October 1999 has undoubtedly resulted in improved efficiencies of battlefield helicopter deployment across the three Services¹¹⁰. The proliferation of several organisations, directly related to helicopter operations that have transformed to a joint structure, provides strong evidence that the approach bears significant fruit for the future. A joint functional helicopter command (JHC) for all military rotary wing operations undoubtedly provides the best effectiveness across a wide continuum of conflict – from humanitarian to “high intensity” ops, spanning all environments.

The limited resources of the defence budget and advance in technology drives the Armed Forces to common ground. In the case of helicopters, fewer airframes with greater capacity to operate over the sea and land is likely to bring about an ever increasing crossover of battlefield and maritime helicopters available to each others environments. The Navy, Army and RAF rely on each other and combined they provide a greater punch than possible as separate elements. There is also great value in the core competencies that each Service brings so it is important to recognise a lead for each within a new HQ.

Despite the need to retain individual expertise of each Service, considerable gain has been demonstrated by having a single authority responsible for helicopter deployment, training and doctrine, development and with a unified approach to the process for future rotary wing procurement. Helicopter numbers to sustain minimum fleet sizes, the commonality of airframes that comes with technology and their use, in terms of environment deployment interoperability, have reached a threshold which is better served by a single HQ. Retaining 2 or more rotary

¹¹⁰ MOD Report by Comptroller and Auditor General, *Battlefield Helicopters HC 486*, Session 2003 – 2004, 7 April 2004, 2 para 7.

wing operating HQs, each with diverse arguments over assets is a luxury that the MOD can no longer afford. The next stage of evolution, for JHC to take functional command and administrative authority of all MOD helicopters, seems set.

What has been more difficult to determine, however, is the timing and resources required to make such structural reform. Many of the building blocks of the change cycle identified by General Starry¹¹¹ are in place, but due to other programmes (such as the Future Carrier programme) and constraints such as cost, at a time of strain on budgets, the eye is not on this ball. Additionally a reduction in the need for helicopters, arising from a reduction in UK military operations in Iraq in particular, has produced a lull in the UK public perception of the stretch to battlefield helicopter fleets. This will remain key until the weight of opinion grows through the success of other recent similar changes (such as Joint Force 2000) and by more discussion of this evolution of JHC. Therefore little action to restructure is likely in the short term.

The economics argument¹¹² suggests that the government is not likely to move headlong into further joint projects as a priority, although the point made on collusion is mute since the Services already have a construct which puts them strongly in bed with one another. A new National Audit Office report may bring about some momentum, but presently none is known to be forthcoming. The matter of cost in the current restrictive budget climate holds the weight of argument, which is unlikely to improve with public focus more on home economy and domestic issues. With a General Election likely in the next 2 years, the existing government will not see any

¹¹¹ General Donn A Starry U.S. Army, *To Change an Army*. Address to U.S. Army War College Committee on a Theory of Combat 10 June 1982. Reported in: *Military Review*: "The Professional Journal of the U.S. Army" March 1983. 23.

¹¹² Professor Keith Hartley, *The Economics of Joint Forces* Centre for Defence Economics, University of York, transcript available: www.york.ac/depts/econ/documents/research/jointery, 1998.

benefit for any outlay that further change requires. So, unless the Services determine the move a priority themselves and demonstrate a budgetary saving, little is likely to be done. Priority now needs to be added to the weight of argument in order for ideas of a restructure to develop further.

Due to the complexity, timing with respect to other significant projects and in the absence of likely further direction from HM Government, Fleet and JHC should set about the process on their own in a “bottom up” review to fully investigate greater efficiency of limited assets. With rotary wing fleet sizes becoming relatively small, in comparison to the past, the ability to flex assets under current organisations is much reduced and therefore the need for this review becomes urgent. A joint helicopter HQ will help achieve efficiencies and will capitalize on commonality through technology. It is unacceptable to wait for the next crisis to determine that more helicopter assets are required to shift the weight of argument in favour of the change. The need for “(battlefield) helicopters (which are) a key capability in fulfilling the majority of the department’s (MOD) objectives as defined in its Military Tasks”¹¹³ demands it.

Proponents for the change must remain engaged until the issue is raised¹¹⁴, so priority can be identified earliest which results in the move. Unless this occurs, opinion in favour of the transformation will not meet the threshold needed to complete the cycle of change.

¹¹³ MOD Report by Comptroller and Auditor General, *Battlefield Helicopters HC 486*, Session 2003 – 2004, 7 April 2004, 2.

¹¹⁴ Or a new situation demands it – critical capacity shortfalls are identified or National Audit Office investigation, as ordered by the House of Commons.

ANNEX A - ACRONYMS

AAC – Army Air Corps

AOP – Aerial Observation Platform

ASW – Anti-Submarine Warfare

AEW – Airborne Early warning

ASaC – Airborne Surveillance and Control

AV – Aviation

BDD – British Defence Doctrine

C2ISR – Command and Control, Intelligence, Surveillance and Reconnaissance

CTT – Conversion To Type

CVS – Carrier Vertical Strike

CVF – Carrier Vertical Future

CHF – Commando helicopter Force

DAAvn – Directorate of Army Aviation

DACOS AV – Deputy Assistant Chief of Staff Aviation

DCDC – Development, Concepts and Doctrine Centre

DE&S – Defence Equipment and Support

DGD&D – Director General Doctrine and Developments

DHFS – Defence Helicopter Flying School

DLO – Defence Logistics Organisation

DOD – Department of Defence

DPA – Defence Procurement Agency

FAA – Fleet Air Arm

FIAC – Fast Inshore Attack Craft

FOST – Flag Officer Sea Training

GWOT – Global War on Terror

HMG – Her Majesty's Government

IMOS – Integrated Merlin Operational Support

IPT – Integrated Project Team

IPS – Ice Patrol Ship

ISTAR – Intelligence, Surveillance, Target Acquisition and Reconnaissance

JDCC – Joint Doctrine and Concepts Centre

JHC – Joint Helicopter Command

LPD – Landing Platform Dock

LUH – Light Utility Helicopter

MARSB – MOD Aviation Regulatory and Safety Board

MOD – Ministry of Defence

MSR – Main Supply Route

NAO – National Audit Office

NAS – Naval Air Squadron

NEO – Non-combatant Evacuation Operation

NFS – Naval Fire Support

NI – Northern Ireland

OPCOM – Operational Command

OPCON – Operational Control

QA – Quality Assurance

RAF – Royal Air Force

REME – Royal Electrical and Mechanical Engineers

RN – Royal Navy

RNAS – Royal Naval Air Station

RTSA – Release to Service Authority

SAAvn – School of Army Aviation

SAR – Search and Rescue

SABR – Support Amphibious Battlefield Rotorcraft

SDR – Strategic Defence Review

SOP – Standard Operating Procedures

SWO(AV) – Staff Warfare officer (Aviation)

TAS – Typed Air Station

UAV – Unmanned Air Vehicle

UK – United Kingdom

WRAM – Work Recording and Asset Management

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Vita

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